Rock Products

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Rock Products

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ALPHABETICAL LIST OF ADVERTISERS

To say you saw the ad in ROCK PRODUCTS gives tone to your inquiry.

Rock Products

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Increased Freight Rates a War Tax

Time for Stone and Gravel Associations to Do Educational Work

THE NEW INCREASE in freight rates which becomes effective June 25 presents a grave problem to the stone and gravel producers for solution. Like a bomb dropped in the industry these new rates may cause shell-shock in the form of bankruptcies. Each drastic measure made necessary by the war finds those affected scrambling to meet the new conditions but if in the meeting of the new conditions the measures are unfortunately so laid that industry is forced to insolvency then those measures are destructive and not constructive.

THE NEW freight rates will be met patriotically by every individual in the stone and gravel industry because they are patriotic to the core. The officials of the Government overworked by war duties may not have been cognizant of the real status of the stone and gravel industry when they created the new rates. It is therefore a patriotic duty for you to bring the right facts of your industry to the officials of the Government that the industry may be saved for future use of the Nation and to prevent the destruction of the material wealth it represents.

NO GOVERNMENT bureau wants to wipe out a legitimate industry or destroy national wealth. If this is done, it is done in ignorance; and if such ignorance exists it may be as much the fault of the industry as of the Government.

PROTESTING against the freight increase on stone, gravel and sand, on general principles, will probably avail nothing. The increase can probably be justified on economic grounds. It is a war tax. Moreover, the railways obviously need the money and all shippers must make the best of it. The Railway Administration has already announced that there will be no changes in the proposed schedule to curtail the estimated increase in railway income.

THE CASE of contracts already made and entered into is of immediate and serious importance, but in all probability these can be adjusted satisfactorily, and after all they do not affect the big question at issue, which is the ultimate effect of such unforeseen high freight rates on the stone, gravel and sand industry as a whole.

ADDED to the recent so-called 15 percent increases, stone and gravel rates have doubled in the course of a few weeks. We have seen them jump to a figure way beyond the wildest imagination of the men who invested hundreds of millions of dollars in plants for turning out these essential building materials. What will be the effect of a 75c to $1.50 freight rate on the consumption of commercial stone, sand and gravel? We will leave out of consideration ballast, fluxing stone, glass sand, etc., for which no substitutes can be readily supplied.

THE ANSWER to the question lies almost wholly with the attitude taken by engineers, architects and the manufacturers of other building materials, such as cement. With the architects and engineers rests the drafting of specifications which will or will not make business possible for many plants. With the cement manufacturers, through their extensive and powerful publicity association, rests the encouragement or discouragement of the side-of-road, fly-by-night type of plant, of which we may expect soon to hear much.

THE SIDE-OF-THE-ROAD, fly-by-night type of plant has been a passing type, and for a number of good and sufficient reasons. The principal one is that such a plant is seldom able to turn out a satisfactory material, or if the material is anywhere near satisfactory, it can not be produced economically. It adds complications to the contractor's organization, and it compels the contractor to add expensive, not easily portable, and short-lived equipment to his plant, which he knows already has most of his capital tied up.

EVERY INDUSTRY has passed through this transition stage. It wasn't so long ago that there was no such thing as a lumber industry. Men with axes and saws went about and made lumber where it was needed. Nowadays the greater part of the lumber output comes from huge mills erected at tide water or shipping centers, to which the logs are brought for many miles by rail and water. The same is true of the lime industry and many others. Anything like a general return to the old order of things is inconceivable even though the cost of commercial sand, gravel and stone be doubled.

FOR SEVERAL YEARS now, engineers and architects have been engaged in extensive study of construction materials. Many experiments have been made and are now being made—all for the purpose of drafting specifications to shut out unsatisfactory materials, and to prescribe tests to determine what are good materials. Unfortunately these investigations in so far as they relate to

the physical qualities, sizes, mixtures, and shapes of stone, gravel and sand, have not progressed far enough to be of the benefit to legitimate producers of these materials that some day they will be. Nevertheless they have proceeded far enough to convince the investigators that these materials play An ESSENTIAL part in good construction.

WHAT A FEW investigators have found out by experiment a host of practical constructors have learned by experience—that good road metal or good concrete aggregates can't be made of poor material, with ramshackle equipment, or with inexperienced, inefficient help. These men are the best customers the legitimate stone or gravel producer has; it will be so always no matter how many new ones have their fling with the portable outfit.

TO PREVENT a temporary unsettling of the industry by the agitation for small portable plants, which we shall soon hear from various sources, systematical educational work is the only answer. This must first be directed toward certain Washington officials who as yet do not appreciate that there is a legitimate stone, gravel and sand industry. Then it must be directed toward engineers and architects for the purpose of impressing them that it takes BRAINS and EXPERIENCE to produce good construction materials as well as to draw plans for incorporating them in a structure.

Proposed Freight Rate on Stone and Gravel Causes Consternation

Shippers at Sea on Course of Action—Varying Opinions Are Presented in Interviews

THAT SHIPPERS everywhere in all lines are at a loss as to procedure in making effective and successful protest against the proposed and ordered increase of freight rates; that in fact the question of what constitutes effective and successful protest is apparently unanswerable, is evident by the general helplessness expressed in conversations and by the fact that at all meetings no definite, promising plan of action has been evolved insofar as knowledge of these meetings have come to light.

It is realized that dealing with the Government is different than dealing with a corporation. A temporary injunction for instance against what would be considered an injurious ruling by those affected might stand against a railroad company—but the Federal courts are not issuing injunctions against Uncle Sam. Nor is it the wish of producers of stone, sand and gravel.

An analysis of the situation indicates that the Director-General's order favors no individual operator, no one locality; that, in short, the order shows no discrimination as between shippers of sand, gravel and stone, so one usually strong objection is estopped at the beginning. The point is, the railroads and Uncle Sam need more money.

Burton H. Atwood, president of the Interstate Sand & Gravel Co., and director of the National Association of Sand & Gravel Producers, in a letter in ROCK PRODUCTS, groups the probable detrimental and the probable beneficial results of the increase in rates, and finds that in the end the situation may not be so bad after all.

Several producers have said to a ROCK PRODUCTS representative something like this:

The Cause of All the Trouble

Abstract from "Special Supplement to Tariffs." Effective June 25, 1918.

RATES APPLY to intra-state as well as inter-state traffic. Issued in June in compliance with General Order No. 28 of the Director-General.

STONE, Artificial, Natural, Building and Monumental. Advance is per 100 lbs... .02
Example: Where rate is 63c net per ton, new rate will be $1.03 per net ton. Where rate is 8.3c per 100 lbs., new rate will be 10.3c per 100 lbs.

CRUSHED STONE, Agricultural Limestone, Fluxing Stone, Ground Stone. Advance is per 100 lbs..... .01
Example: Where rate is 53c per net ton, rate will be 73c per net ton. Where rate is 53c per ton of 2240 lbs., rate will be 75c per 2240 lbs. Where rate is 6.3c per 100 lbs. rate will be 7.3c.

SAND AND GRAVEL. Advance per 100 lbs..... .01
Example: Where rate is 42c per net ton, rate will be 62c per net ton. Where rate is 5c per 100 lbs., rate will be 6c per 100 lbs.

CEMENT, Cement Plaster and Plaster. Advance per 100 lbs..... .02
Example: Where rate is 6.3c per 100 lbs., rate will be 8.3c.

LIME. Advance per 100 lbs..... .01½
Example: Where rate is 6.5c per 100 lbs., rate will be 8c.

"I don't know that we can do anything. There is no contention that I feel certain can prevail against the Government's decision. The Director-General virtually puts the proposition before us on patriotic grounds.

"While we must all acknowledge the increase is very large, we must still admit that no one using the railroads has any advantage over his competitors. The rate applies everywhere, for intrastate as well as interstate traffic; so it will affect all alike.

"The shipper tied up with contracts of course will be hurt where his quotations have included freight at the present rates, and some relief should be found for those in that position.

"If we contend that the increase will drive us to shipping by motor trucks, Uncle Sam will say: 'That's just what we want—use trucks for delivering.'

"However, it is not necessarily as bad as it looks to the producer and shipper. Whatever increases he must pay, he simply adds to the selling price, so the increase is passed along and as usual the ultimate consumer pays the bill."

Of course this order tends to increase the cost of living, which means ultimately an increase of wages. But there are redeeming features as enumerated by Mr. Atwood.

The greater use of motor trucks will tend to localize business more, which being what the Government wants, will reduce the strain on the railroads. Those who do much delivery by truck will profit handsomely for a period. For instance plants like those in Chicago or close to any city that do a very large part of their delivery by motor trucks will be enabled to raise prices to the extent of the one cent a hundred.

National and State Associations Act

INDIANAPOLIS, Ind.—A meeting of the Executive Committee of the National Association of Sand & Gravel Producers has been called to meet in Indianapolis, June 18, to discuss what action shall be taken in regard to the freight rate increase and also on other important matters.

The Message to McAdoo

The following message was sent to the Director-General early in the month. A similar one went to B. Campbell, chairman Eastern Freight Traffic Committee, 143 Liberty-st, New York.

Indianapolis, Ind., June 1, 1918.

Wm. G. McAdoo, Director-General of Railroads, Washington, D. C.

An advance in freight rates of 20 cents a ton on sand and gravel as proposed by the order recently issued and in addition to the increases granted within the last year amounting in some instances to 65 per cent, is more than this low-priced commodity will stand.

With few exceptions such action will necessitate the closing down of the sand and gravel plants throughout the country, involving investments amounting to millions of dollars. Building and highway contractors will be forced to abrogate existing contracts or suffer heavy losses. Kindly advise where and when formal protest may be presented.

E. G. Sutton, Secretary,
National Ass'n of Sand &
Gravel Producers.

Indiana Protests to Public Service Commission

EDITOR ROCK PRODUCTS—A few gravel producers from Ohio, Illinois and Indiana had an informal conference at Indianapolis a few weeks ago in regard to the car situation. It was suggested that further meetings of this kind might be held with profit but no definite action was taken or matters discussed that would be interesting for publication.

The Indiana Association have already made protest to the Indiana Public Service Commission and have asked that they intervene in their behalf with reference to the proposed freight increase of 20 cents a ton to apply on shipments of sand and gravel.

Association Active on Questions

We have also sent telegrams to the Director General of Railroads, as well as to the Chairman of the Eastern Freight Traffic Committee.

It is our purpose to take the matter before C. J. Brister, Chairman of the Central Freight Traffic Committee at Chicago, and to take any further action that may appear expedient from future developments. If the matter is presented before the authorities at Washington, it will probably be done in the name of the National Association.

E. Guy Sutton, Ex-Sec.
Indiana Sand & Gravel Producers' Asso.
Indianapolis, Ind., June 10.

Atwood Discusses Probable Effect of Increase

ROCK PRODUCTS—Replying to your inquiry in regard to the proposed advances in freight rates, and the effect upon the sand and gravel industry, I take pleasure in offering the following suggestions:

The necessity of the proposed advances, as I understand, is brought about by the increased cost of railroad operation due to the advance in labor under the Adamson law, the recent advances granted to other railroad employees by the Government, and the increased cost of railroad equipment and supplies due to war conditions. In other words, the emergency calling for increased revenue is due to commercial conditions created by the war and increased expense of operation created by the action of the Government.

The proposed increase on sand and gravel and stone, amounting to one cent per hundred pounds, is not a twenty-five per cent increase, but since almost all of this commodity which is transported by railroads is moved only a short distance, and under rates which probably average fifty cents per net ton or less, it will be seen that the advance runs from forty to seventy per cent.

Perhaps the advance is placing an undue and unjust burden upon the shipper and consumer of these raw materials, but since the Director General says they must have the money and insists that the rates are to be made effective, it may appear unpatriotic for sand and gravel producers to enter opposition to the advances.

I may mention three or four ways in which the sand and gravel industry will be injuriously affected by the proposed increases.

FIRST: Existing contracts for the delivery of material under which the shipper will be obliged to pay the increased freight.

SECOND: Increased cost of supplies, principally coal.

THIRD: Decreased demand for sand and gravel owing to the increased cost.

FOURTH: Decreased demand for sand and gravel to be shipped by railroad, because of the unusual advantage which will inure to the local stone quarry or gravel pit within trucking distance of the work.

There are some possible advantages:

FIRST: Financial relief to the Government which is of first and greatest importance.

SECOND: Increased ability on the part of the railroads to add to their equipment and to engage in improvements entailing construction work.

THIRD: Increased use of automobiles and auto trucks for transportation purposes, intensifying the demand for permanent pavement of roads.

It is possible that the sacrifice which the industry is called upon to make will be fully compensated in the end, and that certainly will be the case if thereby there is any material aid to the Government in the winning of the war. It should be borne in mind that the proposed increases are not in any sense a measure of what is or may be a reasonable rate for the transportation of sand and gravel under the present conditions of traffic, and that when the emergency of the present situation is taken care of the rates should automatically return to the present level.

Very much more could be said on this subject, and I have attempted only to touch upon some of the points which should be considered.

Yours very truly,
BURTON H. ATWOOD.

Old Arguments Still Apply Says Iowa Association

EDITOR ROCK PRODUCTS—The increase as shown by such information as is available seems to be disproportionate when compared with the increase on other commodities.

When the railroads petitioned for an increase of 15 cents last June, we filed a brief covering our case at the time, and as a result our rates were not increased, or rather the railroad withdrew the petition. The facts at the present time are still applicable to the present case, and with some few changes our same brief will be used.

During the present controversy, we ex-

pect to act in conjunction with the National Association when they push this matter for hearing. We, of course, feel that the government has taken these steps, because they were necessary, but Secretary McAdoo has invited objections in so far as he has announced that there are existing many inequalities which will be ironed out.

W. R. Webster, Sec.-Treas.
Iowa Sand & Gravel Producers' Asso.
Mason City, Iowa, June 10.

Ohio Gravel Men Protest Freight Rate Increase

MEETING in Columbus June 4, the Ohio Sand and Gravel Producers' Association passed the following resolution, which was transmitted to Director-General of Railways McAdoo at Washington:

Resolved, by the members of the Ohio Sand and Gravel Producers' Association at a session thereof held at Columbus, Ohio, June 4th, that, with due regard to the demands made by the national emergency on individuals and industry to accept grave and unusual burdens, we are earnest in our conviction that a freight increase so drastic as to be in effect prohibitory can hardly be justified; that when such increase is relatively immoderate, comes unheralded, and does not take in consideration existing contracts, it is in effect fatal to industries already staggering under the exactions of war.

Resolved that it is not fair to an industry which has patriotically responded to every call of the Government in the purchase of Liberty Bonds, war savings stamps, Red Cross and K. of C. contributions, in the payment of all taxes, to overwhelm it with an additional tax under the guise of prohibitive transportation charges.

The situation as regards the sand and gravel situation is very serious, according to the unanimous opinion of all present. Many contracts have been made based on old rates and the 20 cents a ton minimum increase means thousands of dollars loss to contractors on road and other construction work.

Raises Industry to Higher Plane Says this Man

A PROMINENT sand and gravel man of a Wisconsin corporation said to a Rock Products' representative:

"I think the increase in rate on our product will really result beneficially to the industry. It will make sand and gravel a desirable commodity for the railroads to carry and they will cater to us. The industry will go on a higher plane. Heretofore the sand and gravel business has been disregarded by the transportation systems; they have looked with disdain upon it, because of the little income and little profit from it."

An Economic Truth

Every time you buy anything people work for you. Save labor and materials for the use of the Government.

Wisconsin Presents Case of Industry in Two Letters

EDITOR ROCK PRODUCTS—The Wisconsin producers are entirely in accord with any emergency raise in freight rates which the government may find necessary in these times.

In Wisconsin, however, the burden of freight increase has been placed on sand and gravel from two to three times more than that placed on other commodities in general. The increase of one cent per 100 lbs. has increased the present rate from 30 to 70 per cent; this added to the already comparative high price of material, due to the increased cost in production, will make the price at its destination almost prohibitive.

Fear Close-Down

Without doubt many, if not all of Wisconsin plants will be forced to close down due to the curtailment resulting from the higher prices and the inability to get cars.

We attach hereto two letters, one to our representative in Senate, the other to A. C. Johnson, of Chicago, in which we endeavor to bring to the attention of the Directors of Railways some of the principal difficulties which we would experience with the unusual increase in freight.

Wisconsin Sand & Gravel Producers' Asso.
I. M. Clicquennoi, Sec.

Milwaukee, Wis., June 14.

Appeal to Senator Lenroot

Hon. Irvine L. Lenroot, Washington, D. C.

Dear Sir: We wish through you to express our attitude to the Director General of Railways on the proposed increase in freight of 20 cents per ton on sand and gravel.

This association is entirely in accord with any freight increase which may be necessary in these times. We desire, however, to point out that the proposed increase will advance the freight on sand and gravel in Wisconsin from 30 to 70 per cent, which will place almost three times the burden on this industry, than on those receiving only 25 per cent increase.

Will Encourage Use of Poor Gravel

Sand and gravel are low priced commodities. In many instances, the price of the product at the plant does not greatly exceed the amount of the proposed freight increase. It is self-evident that the industry will be seriously crippled if not in many instances entirely eliminated. The immediate effects of such an increase are many, but aside from the serious financial losses due to enforced idleness, it will encourage the use of inferior local gravel (where rail haul is not necessary) with the resulting failures and poor concrete work.

If the Director General of Railways finds an increase in freight rates is necessary, why cannot the raise in sand and gravel hauling be within the same limits as other commodities? There is between one and two million dollars invested in gravel and sand production in Wisconsin, which in the past few years has been developing the natural deposits of sand and gravel in the state, making possible the construction of the best roads and building in the country.

Your assistance in bringing this matter to the attention of the Director General of Railroads will be highly appreciated.

Wisconsin Sand & Gravel Producers' Asso.
I. M. Clicquennoi, Sec.

Milwaukee, Wis., June 5.

Case Laid Before Johnson

The letter to A. C. Johnson, Transportation Building, Chicago, said:

"We are advised that you have been appointed by the Director General of Railways to investigate the merits of the proposed increase in freight rates. This association first wishes to state that it has no objection and, in fact, is in accord with any increase in freight rates which may be necessary at this time.

"We desire to point out, however, that the proposed increase of one cent per 100 lbs. on sand and gravel will increase the rates in Wisconsin on this commodity from 30 to 70 per cent. * * * On account of the low price of the commodity and of the large amount of the ultimate cost at its destination being freight, this large increase will make the cost almost prohibitive.

Association Will Assist

"As we have stated above this association will gladly assist in meeting any emergency which the government finds necessary, but without further information we cannot see why we should have to bear almost three times the burden than those having the general 25 per cent increase, particularly so when it is considered how great is the percentage of cost at its ultimate destination.

"We make these suggestions to you in the spirit of co-operation and trust that this information will asist you in determining a rate which will best serve the government and with fairness to all concerned."

Producers with Contracts Need Protection

F. M. Richardson of the Richardson Sand Co. sees no way to escape the Director-General's order. "But," he says, "the producer with a contract should be protected in some way. In many cases the producer if not losing money now under the present rates is not making any."

The Freight-Rate Bugaboo

Written before the present rate increase was promulgated.

By F. D. Coppock
President, Ohio Sand and Gravel Producers' Association

FOREMOST among the many perplexing problems with which the sand and gravel producer has had to struggle is that of freight rates on his commodity.

A careful study of the question, aided by a conservative comparison with other rates inevitably leads to the conviction that few other commodities are so discriminated against in transportation charges as those of sand and gravel. Not only are the rates discriminatory in effect, but they are surprisingly without uniformity, they are chaotic, confusing and ruinous to our industry as a whole.

To the careful observer, however, a radical readjustment of this condition is looming on the horizon. Because of Government tendencies to standardize and regulate, and because State Railroad Commissions, general freight agents of the large railway systems, shippers of open-top car commodities—all recognize its imminent advent.

Government control of railroads has not brought it about, but only hastened it. The very unfairness and injustice of the present system is guaranty that it must and will be done away with.

Assuming, therefore, that radical readjustment is before us, there is nothing more obvious than that sand and gravel men should get on the job and, instead of fighting the inevitable, accept it, and assist in working out the change to the end that the new method may be a fair and equitable one.

The Associations of Ohio, Indiana, Michigan and Illinois, because of their geographical relationship, should, in conjunction with the State Railway Commission, and the General Freight Agents of the railroads, immediately get together, not in a spirit of suspicion or antagonism, as in the past, but with a spirit of co-operation and fairness, determined to work out some equitable basis which in the end will be equivalent to the average of the present rates and determined by the total tonnage handled on the various rates.

In my opinion some of the extremely low rates in effect today, which are objected to by the carriers and which encourage their dissatisfaction and lack of interest in the gravel business as a whole, are more detrimental to our best interests and future than some of the high rates. In the final analysis it will be found that there can be but one solution—some standard upon which fair, impartial, uniform rates on sand and gravel can be predicated, and those rates applied to some form of standard mileage basis.

Priority Order Held Up

THERE is an order already made out, says T. E. Wright, secretary of the N. Y. Builders' Supply Association, and resting with the Government which may be placed in force at any minute, declaring the business of building supplies to be non-essential and ordering all shipments discontinued at once, unless such supplies are to be used for Government purposes. This applies more especially to cement. While this order may not be placed in effect at all, all dealers should carry sufficient stocks to guard against this order, should it be placed in effect as it is liable to be at any minute.

Gypsum Industry in 1917

THE total quantity of crude gypsum mined in the United States in 1917 was 2,696,226 short tons, a decrease of 61,504 tons from the output of 1916. This decrease was due to the reduction in building operations in the second half of the year. The total value of crude and calcined gypsum produced in the United States, however, was far greater than ever before, amounting to $10,502,509.

According to R. W. Stone, U. S. Geological Survey, Department of the Interior, the output of gypsum in 1917 was as follows:

Gypsum produced and marketed in the United States in 1917.

State	Total quantity mined (short tons)	Total value of crude and calcined gypsum
California	30,552	$ 96,718
Iowa	461,864	1,837,639
Kansas	79,331	424,611
Michigan	375,803	1,549,614
New York	606,268	2,036,820
Ohio	270,538	1,223,301
Oklahoma	158,017	544,129
Texas	257,328	996,262
Wyoming	55,844	197,867
Other states and Alaska	400,681	1,595,548
	2,696,226	$10,502,509

As might be expected, the average price per ton for gypsum and gypsum products shows a large increase over the price in 1916. The average value of land plaster rose from $2.04 a ton in 1916 to $2.74 in 1917, of gypsum for retarder in Portland cement from $1.34 to $1.65, and of all grades of calcined gypsum from $3 97 to $5.55.

Phosphate Rock Industry Gaining

Increasing Demand for Domestic Consumption Making Up for Falling of Exports

THE phosphate rock industry, which suffered severely in 1915 and 1916 by the war in Europe, made a strong recovery in 1917. In spite of the shortage of railroad cars and fuel oil that affected the output of the eastern fields the quantity of phosphate rock marketed in 1917, according to R. W. Stone, U. S. Geological Survey, Department of the Interior, was 2,584,287 long tons, valued at $7,771,084, as compared with 1,982,385 tons, valued at $5,896,993, in 1916.

The output by states is shown below.

PHOSPHATE ROCK MARKETED IN 1917

State	Quantity, Long Tons	Value
Florida	2,022,599	$5,464,493
South Carolina	33,485	138,482
Tennessee, including several thousand tons from Kentucky	513,107	2,126,353
Idaho, Utah, Wyoming	15,096	41,756
	2,584,287	$7,771,084

As a result of the falling off of the foreign demand at the beginning of the war in Europe our output of phosphate rock fell from about three million tons a year to less than two million tons in 1915 and 1916. Before the war the exports were nearly half the domestic production, but in 1915 they decreased from about a million and a quarter tons, the quantity usually exported before the war, to only a quarter of a million tons and were only one-seventh of the domestic production. In 1917 the exports were 166,003 long tons, or only 6 per cent of the quantity marketed. The rock exported went principally to Spain, France, England, Ireland, Scotland, Canada, and Cuba.

A notable feature of the year was the increase in production in the Western States, where there are now four producers instead of only one or two and the output was considerably greater than in any previous year. It is expected that the output from the Rocky Mountain phosphate fields will continue to grow, for the rock is of high grade and abundant, and the demand for it should increase as the country on the Pacific slope is developed.

The demand on the United States to supply food not only for herself but for her allies, in larger quantity than ever before, means intensive agriculture and the use of great quantities of fertilizers. Phosphate rock should be produced in 1918 in greater quantity than in 1917, and the output may approximate pre-war tonnage.

Form National Agricultural Pulverized Limestone Association

Producers Bind Themselves to Make Product Which Will Pass 100 Percent Through 10-Mesh and 60 Percent Through 100-Mesh— Napla Brand

A HISTORY-MAKING MEETING of manufacturers of lime and pulverized limestone took place at the Hotel Hollenden, Cleveland, Ohio, June 6. The Agricultural Lime and Limestone Association went out of existence and a new association, whose whole energies will be devoted to promoting the use and sale of pulverized limestone, came into existence.

Prominent lime manufacturers have now definitely taken the stand that pulverized raw limestone is a legitimate product and will maintain a bureau for its promotion on a scale which seems bound to have a tremendous influence on its future use in agriculture. They recognize if the limestone industry is put on a businesslike basis all manufacturers of agricultural lime will ultimately reap the benefits.

Agreement on Fineness

At the meeting of the Agricultural Lime and Limestone Association at Columbus, May 1, reported in ROCK PRODUCTS of May 8, there was a big difference of opinion on the fineness of grinding economical and desirable. This was caused chiefly by the fact that several manufacturers who have been supporting the old association are not equipped to produce as finely-ground a product as it was believed the association should advocate. These manufacturers have since been won over to the position taken by the advocates of fine grinding and in the near future will rearrange their plants to produce the specified product.

The specified product is a limestone ground so fine that 100 per cent will pass a 10-mesh screen and 60 per cent a 100-mesh screen. Several of the founder companies are of course producing a material finer than this. The constitution is so worded as to include also manufacturers of precipitated calcium carbonate and of pulverized marl.

Members Licensed to Use Trade Name

Members of the Association must sign a contract to produce as good a grade as this material before they can obtain licenses from the Association's manager to use the copyrighted trade name "NAPLA," which it will be seen is composed of the capital letters in the Association's name. This brand name and an appropriate insignia will be used in all the Association's advertising and in all the advertising of the member companies.

A WORD FROM THE PRESIDENT

I HAVE GREAT hopes of the material good that we (the Agricultural Pulverized Limestone Association) might accomplish, not only in requiring the manufacturers to produce a standard article of agricultural limestone, but also in educating the farmers to the value of using more lime.

J. C. KING.
Youngstown, Ohio.

If the plans of the promoters of the Association are carried through the word Napla will become synonymous with agricultural limestone. The brand will be carried on all the letterheads, circulars and booklets of the member companies, as well as in their advertisements.

Use Own Brands Too

The use of an Association brand is not intended to supplant the use of individual manufacturer's brands, but to reinforce the manufacturer's brand with the prestige of a national institution. Thus the well-known "Tiger" brand of the Kelley Island Lime and Transport Co. will still be the "Tiger" brand, but it will be the "Napla" Tiger or the Tiger "Napla" brand. No manufacturer will lose the advantage gained by his own advertising but will gain something through the Association's advertising.

The Association starts with a membership composed almost exclusively of Middle West producers, so that its advertising will probably be confined to this section of the country for the present at least. However, it lies within the power of the executive committee to fix the limits of the district to be reached by advertisements.

Funds for Association Work

The constitution of the new Association wisely provides for two distinct working funds. One is a straight tonnage assessment to carry the overhead expenses of maintaining the Columbus bureau, which all members, irrespective of their location, must pay. This entitles them to the publicity literature and advice of the bureau and all other advantages to be derived from the membership. Provided these members are not in the district defined by the executive committee they will be entitled to use the name and brand of the Association in their own advertising.

For those members in the district which the Association proposes to cover with its advertising, special funds are to be raised in excess of the membership dues. The amount of these funds is to be determined by the executive committee and assessed pro rata according to tonnage or production. In this advertising all members in the district to be reached must participate, if they want to use the trade name and brand of the Association.

In addition to these sources of income there will be an initiation fee, which may be increased from year to year, as in the judgment of the executive committee the value of the Napla brand increases. For the foundation members the initiation fee will probably be fixed at $50.

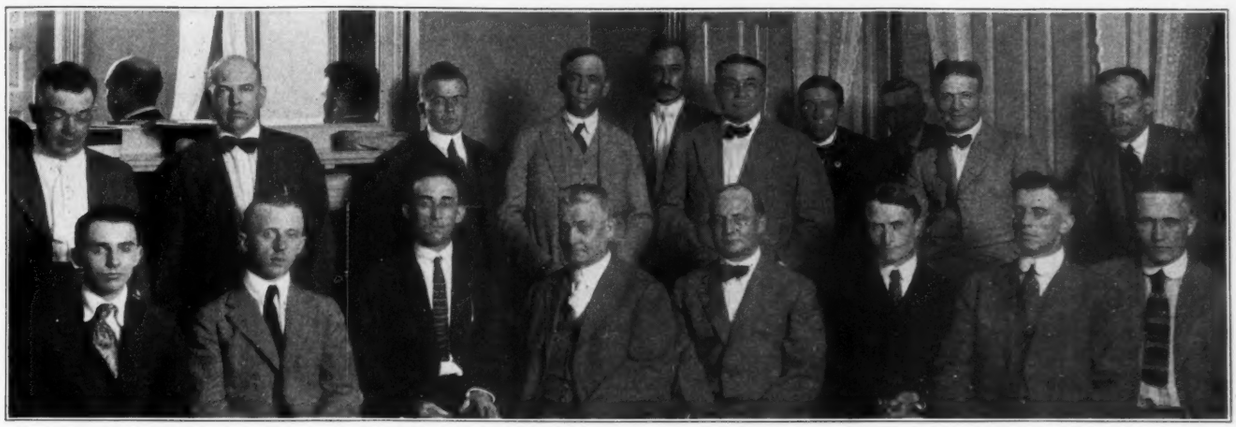
Officers Elected

Having adopted the new constitution and by-laws the charter members proceeded to elect the following officers: President, J. C. King, of the Carbon Limestone Co., Youngstown, Ohio; Vice-President, W. H. Hoagland, of the Marble Cliff Quarries Co., Columbus, Ohio; Executive Committee, F. R. Kanengeiser, of the Bessemer Limestone Co., Youngstown, Ohio; H. E. Bair, the France Stone Co., Toledo, Ohio; A. A. Hall, Ohio Marble Co., Piqua, Ohio; J. W. Wirth, A. & C. Lime Co., Canton, Ohio, and Henry Angel of the Kelley Island Lime and Transport Co., Cleveland, Ohio.

G. J. Wilder, who has served so well as Manager of the bureau will continue to conduct the affairs of the new association, at the old address, Hartman Bldg., Columbus, Ohio.

Charter Members of the Association

A. & C. Lime Co., Canton, Ohio.
Bessemer Limestone Co., Youngstown, O.
O. C. Barber, Allied Industries Co., Canton, O.
Carbon Limestone Co., Youngstown, O.
Dolomite Products Co., Maple Grove, O.



Organization Meeting of the National Agricultural Pulverized Limestone Association

Top row, left to right—G. J. Wilder, Columbus, O., Manager Assn.; Paul C. Hodges, Columbus, O., Traffic Mgr. Marble Cliff Quarries.; John H. Voorhees, Washington, D. C., Agronomist Agr. Lime Bureau; F. R. Kanengeiser, Youngstown, O., Vice-President Bessemer Co.; W. M. Brown, Toledo, O., France Stone Co.; Henry Angel, Cleveland, O., Sales Manager Kelly Island Lime & Transport Co.; C. W. Hitchcock, Cleveland, O., Federal Lime & Stone Co.; Carl Hall, New Castle, Pa., Agr. Dept., G. W. Johnson Limestone Co.; Clyde Calvin, Youngstown, O., Agr. Dept., Bessemer Limestone Co.; Natham C. Rockwood, Chicago, Ill., Editor Rock Products.

Lower row—John T. Vorpe, Cleveland, O., Cleveland Correspondence Co.; Sam'l G. Wells, Wellsburg, W. Va.; A. C. McCormack, Cleveland, O., Sandusky Portland Cement Co.; C. J. Reilly, Cleveland, O., Sandusky Portland Cement Co.; J. C. King, Youngstown, O., Sales Manager Carbon Limestone Co.; W. P. Kelly, Cleveland, O., Dolomite Products Co.; J. W. Wirth, Canton, O., A. & C. Lime Co.; Carl W. Minnimum, Columbus, O., Sales Manager Marble Cliff Quarries Co.

France Stone Co., Toledo, O.
Federal Lime & Stone Co., Cleveland, O.
Marble Cliff Quarries Co., Columbus, O.
Ohio Marble Co., Piqua, O.
Kelly Island Lime & Transport Co., Cleveland, O.
Kewana Lime Products Co., Fresno, Cal.
New Castle Lime & Stone Co., New Castle, Pa.

Agricultural Lime Essential Says Secretary Houston

Department Recommends Conditional Fuel Supply to Priority Board for Lime Plants

LIME is considered an essential in agriculture under certain conditions by the Department of Agriculture which has recommended to the Priority Board of the War Industries Board that fuel supply for specific lime burning plants shall be authorized. Correspondence of the War Service Committee of the National Lime Manufacturers' Association and the Department has been issued as General Circular No. 29, as follows:

The Secretary's Recommendation

To the Lime Industry: This Committee is in receipt of the following letter from the Secretary of Agriculture:

"Department of Agriculture, Washington, D. C., June 7, 1918. Receipt of your letter of the 25th ultimo, requesting that this Department certify to the Priorities Board of the War Industries Board that lime burning plants are essential to war operation because of agricultural necessity, is acknowledged.

"I understand that what is desired is that plants burning lime for agricultural use shall be listed on Preference List No. 1, and that the effect of this listing would not be to insure them fuel to an unlimited extent, but leave them subject to such restrictions as to quantity and time of delivery as the War Industries Board may impose.

"While the importance of lime as a factor in crop production is fully appreciated by the Department, and also that its use is essential to the production of some crops under certain conditions of soil, our crop specialists advise me that it cannot properly be classified as essential to crop production generally to the extent that agricutural implements, seeds, spraying equipment and materials and fertilizers are essential, which commodities are included in Preference List No. 1.

"The fact that lime is essential for certain important agricultural uses makes its uninterrupted production necessary. The only practical method of insuring this appears to be through preferential treatment as regards fuel supply, leaving to the War Industries Board the determination of the extent to which fuel supply for specific lime burning plants shall be authorized.

"On this basis recommendation has been made to the Priorities Board of the War Industries Board in order that the production of such portion of the agricultural lime supply as is essential to agriculture, shall not be interfered with.

"D. F. Houston, Secretary.

"It is clearly shown by the letter from the Secretary, that lime is an essential agricultural commodity to the war operation, under the conditions as specified therein; that, under the recommendation of the Secretary of Agriculture, the manufacture of lime, as may be required for agricultural purposes, should not be interfered with insofar as the Government may be able to co-operate in the matter of fuel supply, and it will further be noted from the letter of the Secretary, that, on this basis, the recommendation is made to the Priorities Board of the War Industries Board, by the Department of Agriculture, in order that the production of such portion of the agricultural lime supply as is essential to agriculture shall not be interfered with.

"The above information is presented to the lime industry of the country by this Committee, in order that the position of the Agricultural Department of the Government may be clearly understood by all lime plants, in the execution of their applications to the Priorities Board for preferential rating of their plants for coal supply and transportation thereof."

Concrete Institute Will Meet June 27, 28, 29

THE fourteenth convention of the American Concrete Institute, which was scheduled for last February, it has been decided will be held June 27, 28 and 29 at Hotel Traymore, Atlantic City, N. J.

The exhibition of the Agricultural Lime Bureau at the New York Exposition, May 20 to 25

Agricultural Lime Exhibition an Educational and Successful Enterprise

Farmers, Scientists and the General Public Greatly Interested in the Bureau's Booth at the New York Show

THE AGRICULTURAL LIME BUREAU is rapidly making progress in its work of spreading the gospel of lime to the farmer, small gardener, and teacher. Perhaps the most visible mark of progress during the past few months was the Exhibit which it placed in Grand Central Palace, New York City, at the National Milk and Dairy Farm Exposition held May 20 to 25.

The Exposition was held primarily as an educational project to teach the consumers of New York City more of the value of milk as a food and to bring rural and city people together under a common understanding of the problems confronting the public today.

By Henry M. Camp
Director of Bureau

The Exhibit of the Agricultural Lime Bureau, located on the mezzanine floor, was spacious and beautifully decorated. Aside from its esthetic qualities it had numerous educational features which constantly drew the attention of crowds.

The end and rear walls displayed eight charts designed to show the value of lime in agriculture. There was also a number of large photographs showing crops grown under good and poor methods of farm practice. Immediately in front of these was displayed the literature of the Bureau which was distributed to interested parties.

In the front of the Bureau exhibit close to the aisle were a one-man size rock of limestone, a demonstration of the litmus paper test, jars of lime and limestone, and a small chemical apparatus designed to show the worthless gas driven off from limestone when it is burned, and the action of lime in the soils. In one corner was a table with samples in attractive display jars of the many various lime products used for agricultural purposes including burned lump-lime, pulverized lime, hydrated lime, air-slacked lime, oyster shell lime, marl, tailings from a hydrating machine, and limestone of varying degrees of fine-

ness, besides a dozen different samples of soils representative of the best in Eastern agriculture.

These special features attracted the greatest attention and brought forth the greatest amount of interest. Above the rock of limestone was a large chart explaining the difference between lime and limestone in the following words:

"This is a piece of limestone as it comes from the quarry. **Limestone is not lime.** It must be heated to change it to lime, which is a different substance, both in chemical and mechanical composition. When limestone is heated carbon dioxide (carbonic acid gas) which it contains is liberated. In every 100 pounds of pure limestone there are 44 pounds of carbon dioxide which is of no value in soil treatment. This means that the farmer must handle and pay freight on 880 pounds of valueless gas in every ton of ground or pulverized limestone purchased, and it takes two tons of pulverized limestone to do the work of one ton of burned lime in correcting acidity in the soil.

"Therefore it pays as a rule, to use the concentrated material, which is lime, as it takes much less, to say nothing of the quicker action of lime in neutralizing soil acidity and in performing the other functions for which alkaline materials are used in soil improvement.

"This is an economic condition which should be thoroughly understood by every farmer in his purchase of liming material."

To show the litmus paper test two pans containing sweet and sour soil, respectively, were plainly exhibited close to the railing where people might review them easily. In each pan of soil were two petri dishes in which the test had been made with some of the soil showing how the sour soil had turned the blue litmus red, and the sweet soil had turned the red litmus blue.

Perhaps the most interesting feature of the exhibit was one consisting of three tall glass jars; one containing a high-grade manufactured hydrate of lime, one containing 10-mesh limestone, and one containing the same commercial 10-mesh limestone divided into its component parts of 100, 60, 20, 10 and coarser than 10-mesh material. These materials had been separated by the standard sieves which were displayed directly in the rear of the jars.

The exhibit showed just what the farmer purchases and how it appears in the bag contrasted with how the 10-mesh stone looks when it is separated so that the proportions of the different sizes or grades of stone may be seen and calculated by the eye. The exact percentage of each different grade was further marked plainly on labels pasted on the jar in front of each size material.

It was impossible to prepare in the limited time at the disposal of the Bureau models of lime kilns to show the operations in the manufacture of lime. In the absence of anything of this kind the treatment of lime with hydrochloric acid which liberates the carbon dioxide was shown by means of chemical apparatus consisting of three flasks, one containing coarse ground limestone, one distilled water, and the third lime water.

The limestone in the first flask was treated with hydrochloric acid resulting in the liberation of carbon dioxide just as it is liberated when limestone is heated. This carbon dioxide was conducted into the distilled water where it was washed of any traces of hydrochloric acid and where the people might see it bubble through the water. From this flask the carbon dioxide continued its journey into the third flask containing lime water showing in a quick and concentrated manner the action of lime in the soil.

The lime water first changes to calcium bicarbonate as the solution becomes milky and then as more carbon dioxide passes through the solution it changes to calcium carbonate—a material chemically the same as the original rock but mechanically different. This served especially well to show the observers the composition of lime and gave an opportunity to explain the worthlessness of carbon dioxide in soil treatment, the concentration of burned and hydrated lime, and the necessity of the fine division of limestone when ground for agricultural purposes.

As might be expected the visitors to such an Exposition composed a very cosmopolitan aggregation. There were city people and country people, farmers, bankers, business men, producers, and consumers. It was interesting to note the attitude and desires of the different classes of people. Some were interested in one feature of the exhibit, some in another. Questions of all sorts were asked the attendants in the booth.

City people were interested in connecting the acidity of the soils of their back-yard gardens. Many took pieces of litmus paper of the two colors home to test their own soils. Others had trouble with one crop or another and requested information regarding them.

Farmers were generally interested in the sources and forms of lime and the best methods of applying it and many stopped to read a chart showing the soil preferences of crops as determined by the acidity or alkalinity of the soil while others took out paper and pencil and copied it.

Literature was in especial demand and the supply of the Bureau was soon depleted. Many signed the register requesting that our literature be sent to them. The pamphlets entitled "Facts About the Use of Lime in Agriculture," "The Humus Supply of Soils," and "The Prescription Method of Liming Soils," proved to be most popular. The two small pamphlets: "The Home Garden," and "Bacterial Activity," were also in great demand especially the former which appealed strongly to many city owners of gardens.

The publication of the Agricultural Research Laboratories describing how to take soil samples for lime requirements tests and advertising the service they render the consumer of agricultural lime by making these tests at a dollar each was in popular demand and a large number indicated their desire to have tests made.

Lime Manufacturers' Convention at Cleveland

AS this issue of ROCK PRODUCTS goes to press preparations are being made at Cleveland, Ohio, for the most important convention in the history of the lime industry. In all probability the National Lime Manufacturers' Association will be reborn under the name Lime Association. All the activities hitherto conducted by various bureaus supported by groups of manufacturers will hereafter be conducted by a single bureau nation-wide in the scope of its work.

The first day of the convention, June 19, is largely devoted to discussion on, and the organization of, the new Lime Association.

The technical session will comprise the reading and discussion of the following papers:

"Our Patriotic Duty," by Chas. Weiler, Union Lime Co., Milwaukee, Wis.

"New Uses That Have Developed for Lime Since the Beginning of the World War," by F. A. Jones, Kelley Island Lime & Transport Co., Cleveland, Ohio.

"Lime in the Glass Industry," by F. Gelstharp, Pittsburgh Plate Glass Co., Pittsburgh, Pa.

"Plant Economies," illustrated by lantern slides, by H. D. Pratt, Plant Engineer, Link-Belt Co., Philadelphia, Pa.

"Blasting in the Quarry and Haulage Around the Quarry," by Irving Warner, Charles Warner Co., Wilmington, Del.

"Properties of Concrete Containing Lime and the Emley Plasticimeter," by F. A. Kirkpatrick, U. S. Bureau of Standards, Pittsburgh, Pa.

The second day, June 20, will be devoted to a visit to the Marblehead plant of the Kelley Island Lime and Transport Co., one of the largest quarries and most modern lime plants in the world. Here an opportunity will be afforded of discussing manufacturing and operating problems on the ground.

The next issue of ROCK PRODUCTS, July 3, will be largely devoted to the doings of this history-making convention of the lime industry.

Fuel Economy in Lime Burning

Changes in Vertical Kiln Design and Operation Which Will Save One-Third the Fuel Consumption

By E. Schmatolla

Consulting Engineer, 150 Nassau St., New York City.

THE problem of fuel economy in lime burning is very important particularly at the present time, and it is to be assumed that it will continue to be an important one after the return of normal conditions, as the costs of mining and transportation will rather increase than decrease in future.

The chief fuel used for lime burning in most of the plants in this country is bituminous or soft coal, a fuel which is very efficient when properly used.

The author will, therefore, first deal with this fuel, but will later discuss also the lower grade fuels such as peat and lignite, which will soon become very important in many sections of this country; for these fuels are used extensively and with great success for lime burning in other countries.

Simple Fuel Test

Before discussing where and how fuel is wasted in the actual methods of lime burning, and how such waste can be avoided, the author will first illustrate and describe a simple fuel test which is very instructive, and reveals characteristic properties of the fuel that should be known, in order to understand how to burn the fuel economically.

Fig. 1 shows a porcelain crucible c, the weight of which has been determined. It is about half-filled with a powdered sample of the coal to be tested (after the weight has been noted). The crucible stands on pipe-stone covered triangle d, and is heated by a Bunsen burner (or a gasoline-torch).

As soon as heat is applied smoky vapors arise from the bituminous coal, lifting the lid c' slightly and burn with a bright flame like illuminating gas. This flame burns for about fifteen minutes, which shows that the coal contains a great quantity of combustible gas, which in most of the American soft coals amounts to from 30 to 35 per cent and more, and represents high heating values which must be properly utilized in the burning process. They are the compounds which produce the smoke, the latter being associated with unconsumed gas—a sign of incomplete combustion or wasteful burning.

After the flame g has disappeared the burner is withdrawn, and the crucible is allowed to cool in closed condition. After cooling we find in the crucible a glossy, spongy, hard cake of coke, which has much more volume than the powdered coal sample. This shows that the powdered coal has been in molten or in soft dough-like condition, while discharging the gas, and that afterwards it has become hard again.

These properties of the soft coal are important to be known, as they explain the behavior of the coal in closed furnaces and gas-producers. By weighing the crucible containing the coke, the percentage of the volatile matter in the coal can be determined, and by incinerating the sample in the open crucible, and weighing again, the ash content of the coal can be easily determined. Then the lime burner will know how much money he has paid for dead material and its transportation. This may indicate the first step toward economizing.

Aids to Complete Combustion

Now let us consider the methods of burning soft coal in a closed level-grate furnace, Fig. 2, in which several fuel saving improvements are also illustrated. This furnace has a fire door t lined with firebrick, equipped with two slot-like apertures t' which can be closed by sliding dampers. In addition to the door this furnace may be equipped with an upper feed hole H, closed by tiles or plates h. Such upper feed holes would allow of semi-mechanical coal feeding from overhead coal bins resulting in a saving of both fuel and labor, certainly a most desirable result.

Generally the coal is fed into the furnace by opening the fire door t and throwing the green coal over the highly-glowing coal bed on the grate r. Feeding in such a manner results in a great excess of cold air being admitted into the furnace and kiln, causing considerable loss of heat (equivalent to loss of coal or money). But the greatest loss is caused by the escape of the fuel values contained in the volatile matter or combustible gas, which is suddenly developed in great excess to the air available for combustion, when the green coal is thrown over the hot layer of coke or half-consumed coal from a previous charge. Therefore, after charging coal most of the upright lime kilns discharge large clouds of smoke, a proof of great waste of heat values.

Part of this waste can be avoided by piling the green coal first on the dead-plate P where the coal will be slowly and gradually pre-heated and caked before being distributed over the grate r. Instead of opening the fire door for this purpose the spreading of the coal may be effected by means of a proper tool inserted through one of the apertures t' as indicated by dotted lines s. A limited quantity of air may be admitted through this damper opening t', facilitating the combustion of the smoke and volatile combustibles without admitting an excess of air.

It is evident that feeding the coal from the top through openings or holes H without opening the fire door offers great advantages. For burning certain sorts of lime it may even be advantageous to let water continuously drip on the coal pile c' through a pipe w equipped with a regulating valve. It is an established fact that the presence of steam in the combustion gas lowers the lime-burning temperature in an economical way at the same time preventing the overburning of the lime, which is particularly important in burning magnesia-lime.

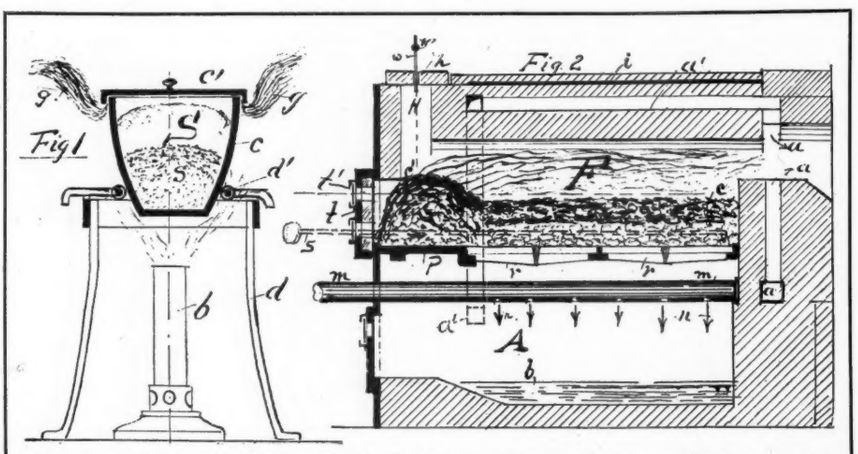


Fig. 1—Method of making a simple fuel test. Fig. 2—Furnace with fuel saving improvements

Preventing Radiation Losses

Considerable losses of heat values are also caused by the flow of heat through the furnace walls and roof of

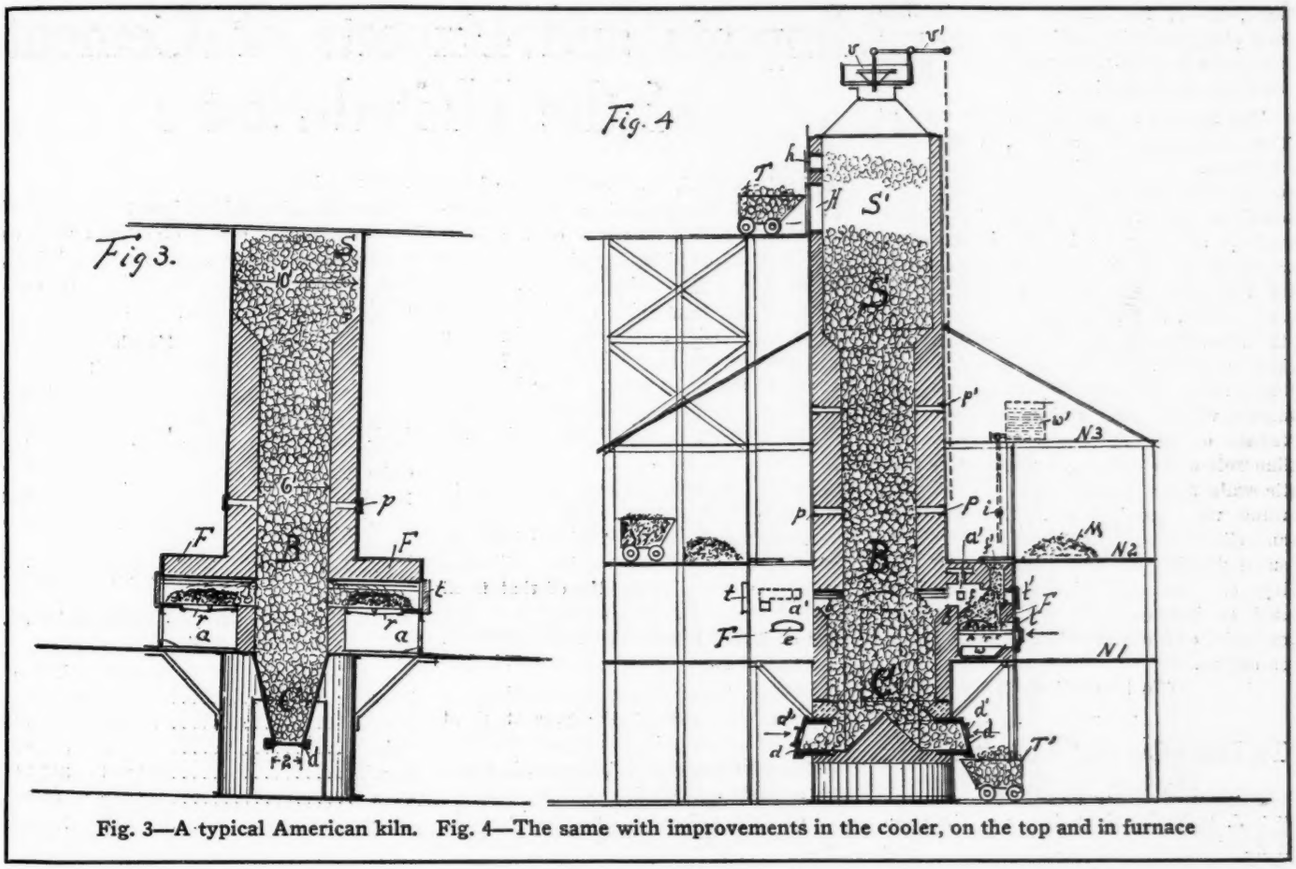


Fig. 3—A typical American kiln. Fig. 4—The same with improvements in the cooler, on the top and in furnace

the furnace. How these losses can be avoided or considerably reduced is also indicated in Fig. 2, which shows hollow spaces a, or ducts in the walls and roof and between these spaces and the outer surface a layer i, which may consist of asbestos, mineral wool or the like.

By introducing a limited quantity of air into these spaces, a', most of the transmitted or radiated heat can be reconveyed to a point a of the furnace, where the heated air can be used for completing the combustion of the volatile matter and smoke developed from the coal bed c, c'. As these hollow spaces allow of the passage of heat by radiation it is important to arrange in the outer wall a layer of heat-insulating material. If forced draft is used, the openings in the pipes should be arranged in such a manner indicated by arrows n that the air is first blown downwards against water kept in the basin b. The moisture in the air will facilitate the removal of the clinkers and will be partly transformed into water gas.

Improving a Typical Kiln

In order to explain further how fuel can be saved in lime burning (and the quality of the lime improved) the author has drawn diagrams, Figs. 3 and 4, the former showing a typical American lime kiln, the latter the same kiln with changes in the cooler and on the top and furnaces similar to Fig. 2. The furnaces may be of other kinds, according to the fuel and the character of the lime to be burned in them.

The typical lime kiln, shown in Fig. 3, has an open top which means that the draft is entirely under the influence of weather and wind conditions, and that no regulation is possible. The loss of heat values thus caused amounts in many cases to 25 per cent and more. During the time of punching the lime, which often takes more than half an hour for each draw the open top causes the loss of immense heat values, which can be avoided for the greater part simply by extending the stone hopper S above the stone-feed platform, and equipping it with a door, a hood and a valve v with lever v', which can be regulated by the fireman from the furnace platform.

Balancing Kiln Draft

Balancing the draft in the kiln is of great importance in order to convey the heat to the center of the kiln, otherwise the flame from the furnace is drawn upwards near the walls of the kiln superheating the lime and melting the lining there, while the stone in the center is not reached by the flame and is calcined much later than the lime near the furnaces. Therefore the lime near the walls is heated much longer than necessary, and the heat which is thereby wasted spoils the lime and fluxes the lining.

This disadvantage of the open typical lime kiln is very considerably increased by the typical shape of the cooler and drawpit C which draws the burnt lime from the center while holding it back near the furnaces and wall—just contrary to fuel economy. Apparently this drawpit became standard at the time when labor saving was considered much more important than fuel saving. This characteristic shape of the kiln profile and drawpit or cooler makes it necessary that in most of such kilns the lime must "stick" through the whole area of the burning zone between the furnaces before it can be drawn. This means that the lime near the furnaces, after having been thoroughly burned must stay in the fire waiting a long time until the lime near the center is finished and becomes soft so that it sticks together with the lime nearer to the walls, and does not "follow" when a charge of burned lime is drawn from the drawpit C by opening the sliding or swinging gate d. This method of burning and drawing requires "punching down" the lime by skilled men. This is hard work and cannot be called a "labor-saving" method. It takes much time and requires removing all the coal from the furnaces together with the spoiled lime, which has rolled into the furnaces, and certainly means wasting of labor, time, lime and particularly fuel.

Kiln Design an Important Factor

These disadvantages can be avoided by giving the lower part of the kiln a profile similar to that shown in Fig. 4, in connection with a particular profile of the furnace and its feeding device. This however, is designed for burning high-calcium

lime, while, for burning magnesia lime and other materials which require a more moderate temperature another design will be shown and described.

The furnace shown in Fig. 4 is more of the semi-gas-producer kind, which discharges flames into the kiln containing a certain percentage of unconsumed combustible gas. A limited quantity of secondary air may be introduced into the cooler C through little damper-openings d' of the draw-doors d for completing the combustion, and at the same time cooling the lime, thereby completely utilizing the heat values which are contained in the burnt lime. From this kiln the lime can be drawn, without sticking in much shorter intervals of time (every two hours). The lime follows particularly or preferably near the walls and cannot roll into the furnaces, which work continuously, while the ashes and clinkers can be easily removed (without disturbing the fire) through side openings e. Compared with the typical kiln such an improved kiln will save at least one-third of the fuel and show a much higher output.

(To be continued.)

To Help Cement Companies in Potash Recovery

H. J. WHEELER, chairman of the Committee on Soils and Fertilizers of the National Research Council, 92 State St., Boston, Mass., is desirous of securing the addresses and locations of all of the cement mills in the United States for the purpose of assisting them, in case they desire any assistance, in connection with the recovery of potash from flue dust, also for the purpose of aiding them in the location of rock materials within reasonable distance of their works which may perhaps be richer in potash than what they have been using.

Sugar Company Plans Potash Plant

GERING, NEB.—The Great Western Sugar Co., it is reported, will install a potash plant in connection with its sugar factories at this city and at Scottsbluff, at each of which the Steffens' process is in use, and by means of which a valuable by-product can be manufactured.

An immense reservoir for collecting the lime water will be constructed, and a pipe line to bring it from each of the factories. The reservoir is to be located on one of the sugar factory farms near the Scottsbluff factory.

Potash Production Far from Sufficient

BOSTON, MASS.—The prospects of the United States producing her own potash are not encouraging. Small quantities have been obtained from the brines of western lakes, kelp, alunite, cement dust and other by-products, but none of these is important enough or sufficiently low in cost of production to compete with German potash in normal times, says the Boston Bureau.

In the opinion of authorities the United States can never cope successfully with Germany unless deposits of actual potash salts are found, like those of Germany, which can be located only by deep borings in regions where geographical conditions may indicate their presence, such as large beds of common salt.

This is a task for the Government, being far too expensive and uncertain for private capital. A single boring, for example, at the present high level of prices for labor and supplies would probably cost $50,000.

Imports and Exports of Cement of the United States

WASHINGTON, D. C.—Imports of cement, both hydraulic and other, during the first three-quarters of the fiscal year 1918 are considerably higher than for the corresponding period of 1917, according to figures now being compiled by the Department of Commerce. During the nine months ended with March, 888,500 pounds of hydraulic cement were imported with a value of $5,970, as compared with 364,500 pounds, worth $2,643, during the same period of 1917.

Imports of other cements amounted to $25,917, against $14,542. Prior to July 1, 1916, no record was kept of the importations of cement other than hydraulic, but during the first nine months of that fiscal year, hydraulic cement imported reached a total of 1,801,900 pounds, valued at $7,841.

Hydraulic Cement Export

Exports of hydraulic cement during the first three-quarters of the present fiscal year show a great increase over those of the first nine months of 1917, and, in quantity, slightly exceed those of the same period of 1916, although the value is nearly 100 per cent greater, due to rising markets.

During the nine-month period, our exports of hydraulic cement amounted to 2,027,324 barrels, valued at $4,502,158, as compared with 1,677,410 barrels, with a value of $2,774,035 in 1917, and 2,009,759 barrels, worth $2,667,896, in 1916.

Every country to which this cement is exported this year shows an increasing consumption, Cuba, especially, making a big jump. The indications are that this country will continue to increase its consumption as, during the month of March, it took more than twice as much as during the same month of the preceding year.

Table of Exports

The following tables show the exports of cements for the month of March, 1918, as compared with the same month of 1917, and for the nine-month periods of each of the three past fiscal years:

	March			
	1917		1918	
	Barrels	Value	Barrels	Value
Panama	22,192	$36,272	15,806	$29,072
Mexico	7,196	16,129	23,618	54,574
Cuba	39,751	71,063	67,276	160,312
Brazil	9,562	16,931	17,569	38,356
Peru	2,700	4,639	7,496	17,749
Other countries	85,221	162,177	77,591	179,523

NINE MONTHS ENDED WITH MARCH,

	Barrels	Value
1916		
Panama	476,152	$589,104
Mexico	91,500	149,164
Cuba	588,767	807,953
Brazil	274,688	317,741
Peru	63,009	84,694
Other countries	515,643	719,240
1917		
Panama	246,952	366,516
Mexico	65,802	140,515
Cuba	494,882	818,086
Brazil	221,998	326,339
Peru	65,725	110,745
Other countries	582,051	1,011,834
1918		
Panama	227,632	441,910
Mexico	94,508	242,441
Cuba	650,654	1,489,255
Brazil	357,534	782,089
Peru	52,947	115,369
Other countries	644,049	1,431,094

Chile's Potash Yield Falls

WASHINGTON—Reports reaching the Department of Commerce show that the exports of nitrate of soda from Chile do not yield the amount of potash that they should produce, with scientific methods employed.

At least 30,000 tons of potash are contained in the 3,000,000 tons of nitrate of soda that are exported from Chile annually. By a proper method of extraction, both from the refined nitrate and the wastage in refining, more than 300,000 tons of potash could be recovered.

Some of the first successful experiments in the recovery of potash were carried out by the "Oficina Delaware" of the Dupont Nitrate Co.

Accident Prevention Activities of The Portland Cement Association

Reasons Why Cement Manufacturers Get Lower Ratings Than Crushed-Stone Quarrymen

AT THE RECENT MEETING of the Ohio quarrymen with the actuary of the State Industrial Commission the point was raised that the rating of "cement manufacturers and quarrying (with and without blasting)" is $1.90 per $100 of payroll as against $3.85 for "lime quarries —with or without blasting, including stone crushing."

The objection was made that cement manufacture included all the hazards of a stone-crushing quarry and plant and more. But the conclusion is not that cement manufacturers should be given a higher rating but that crushed-stone producers have lots to learn from the experience of the cement manufacturers in getting a lower rating.

Should Be Encouraged by Figures

The rating of an industry is determined by its hazard. But the hazard of an industry is not a matter of speculation and opinion; it is a statistical record of injuries and fatalities. By several years' attention to compiling statistics and by systematic accident prevention the Portland cement manufacturers have been able to keep their rating at less than half that of the crushed stone industry, although obviously the inherent hazard is at least as great.

Therefore, instead of arousing the ire of the crushed stone producers, the $1.90 rate of the cement manufacturers should be a source of encouragement, for it proves the possibility of saving large sums of money by following the example of the cement men in reducing quarry and mill accidents.

An Accident Prevention Bureau

For several years the Portland Cement Manufacturers' Association has had a committee on accident prevention and insurance. This committee has met annually and discussed ways and means of reducing accidents to workmen. Moreover, the Association has maintained a Bureau of Accident Prevention since 1913, which has made regular and special inspections of the plants of the member companies. This bureau has also issued monthly bulletins, filled with good suggestions and calling attention to particular hazards of the industry and to flagrant violations of safe practices.

The majority of the members of the Portland Cement Association are also members of the National Safety Council and receive the benefit of the bulletins, lectures and other service of the Council. One of the aims of the Accident Prevention Bureau of the Association has been to induce member companies to join the Safety Council.

Collection and Study of Statistics

The Accident Prevention Bureau has collected statistics and analyzed accidents in the cement industry very thoroughly. This work has been highly commended by both Federal and various state authorities, and the statistics have been of much value and assistance to insurance actuaries in computing insurance ratings.

The work of the Accident Prevention Bureau is now expanding to include problems of housing and other considerations, which have a large influence on the general welfare and happiness of the employes and prevent so far as possible frequent labor turnovers. It has been found by actual experience that accidents are a direct cause of labor turnover.

Accident Prevention by Education

"ONLY a very small proportion of those accidents reported to the Portland Cement Association could have been prevented by any kind of safeguard," says H. G. Jacobsen, Manager of the Bureau of Accident Prevention of the Association. "Most of the accidents happen by reason of carelessness and bad practice and can only be prevented by educating the people in the plants. To do this is by no means an easy task, and it can not be done in a day. The enormous labor turnover at the present time has been used as an excuse for not doing more along safety educational lines. This is a poor excuse—we might as well claim that it is of no use to teach children the three R's, either because many of them die, or because they do not use the education as they ought to. It does not matter much in which school the child receives its education, and the same is true to a great extent of education in safety. To save human lives and limbs in our industries is necessary, and it is everybody's duty to do their share."

In statistics of accidents the Association records show nothing wonderful. But, nevertheless, the accomplishment has been great. During the last two or three years there has been a big increase in industrial accidents of all kinds, due, of course, to the extraordinary speeding up of some industries and to the tremendous labor turnover. In the face of these conditions the members of the Portland Cement Association have held their own, and in the case of many individual plants which have availed themselves of the Association's assistance and co-operation the loss from accidents has been cut in two.

Gained Favorable Publicity

Moreover, the accident study and prevention work of the Association has proved very valuable from a publicity point of view. By making known this branch of the Association's activities and by giving the Bureau of Labor Statistics and other Federal authorities the use and benefit of the statistics and studies much favorable publicity was gained. In other words the accident prevention work was probably worth its cost in putting the cement industry on the map of the Federal authorities and of the general public.

Employees' Rule Books

One of the most important services rendered by the Bureau of Accident Prevention to the industry was the publication of an "Accident Prevention Rule Book." These books have been printed in seven languages and have been placed in the hands of thousands of laborers. They are bought by the company members of the Association at cost and distributed by the various companies to their employees. Since then (1916) there has been an effort made to produce an illustrated monthly bulletin which would have an appeal to the laborer as well as to the official for whom it was originally designed.

Every year at the annual congress of the National Safety Council there is a meeting of the Cement Section, at which papers are read and discussions take place on accident prevention. The proceedings are printed and distributed to the members of the Association before their annual meeting.

Work of Its First Manager

No description of the work of the Accident Prevention Bureau of the Portland Cement Association would be complete without a eulogy of the late Robert Brinton Hill, who was its manager from 1914 until September, 1917, when he resigned to enlist in the British Royal Flying Squadron. The prestige which the accident prevention work of the Association attained, not only among the members of the Association but nationally, was due to his earnest, efficient and untiring efforts. He was recently killed in action in France. The present manager of the Bureau is H. B. Jacobsen, who is ably carrying out the splendid work begun by Mr. Hill.

Use 11½ Tons of Dynamite for 150,000 of Trap

Details of Large Tunnel Blast in Hardest Kind of Trap Rock

THE BOUND BROOK CRUSHED STONE CO., of Bound Brook, N. J., has just blasted down 150,000 tons of the hardest kind of basalt (trap rock), using in the shot 11 tons, 1,250 lbs. of dynamite, in the following proportions: 17,250 lbs. of 50 per cent L. F. Extra, 4 by 8 in., 4,000 lbs. of 50 per cent L. F. Extra, 1½ by 8 in., 2,000 lbs. of 50 per cent Gel., 1½ by 8 in.

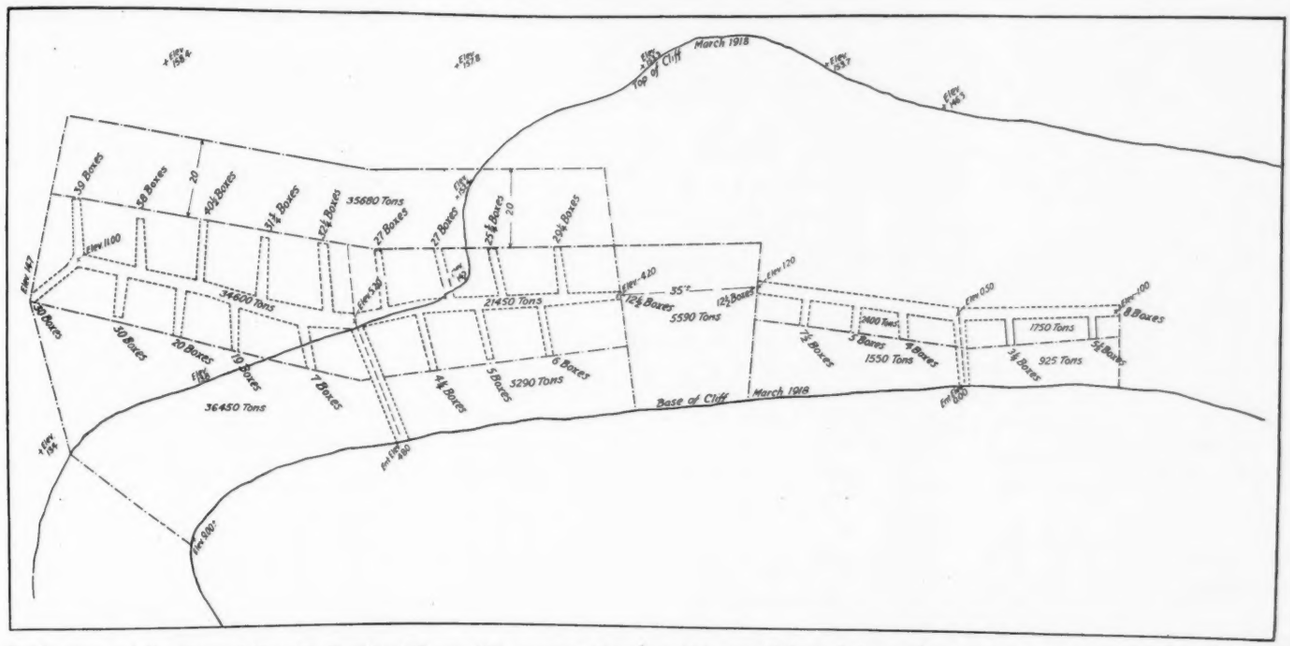
In preparing for the blast, during the winter and spring, two tunnels were cut on a level with the quarry floor; the larger tunnel of the two was driven in at right angles with the quarry face to a depth of 35 ft., then a drift was cut each way at right angles with the main entrance, or parallel with the quarry face; the main tunnel was 145 ft. long. There were 17 drifts from this main tunnel, averaging 15 ft. each in length. In the end of these drifts the dynamite was loaded in quantities as shown on accompanying sketch.

The second and smaller tunnel which was shot at the same time, was cut in a distance of 20 ft. from the face of the quarry, then branched at right angles to right and left, the same as the larger tunnel, making the straight tunnel 98 ft. long. From this there were five drifts—all on the same side, to an average depth of 9 ft. towards the quarry face—making a total in all of about 535 ft. of 4 x 4 ft. tunnel in the project.

It was this company's first experience with the "Cordeau-Bickford" system of detonation. The fuse was looped into each pocket of the explosive, as it was loaded, forming a circuit in each of the four main branches of the two tunnels; the two ends of each of the four loops of fuse were brought out to the mouth of the tunnels.

After the tunnels were packed full of stone sand, C. V. Higgins, local manager of the company, discovered that by attaching the two ends of each loop of fuse to a galvanometer it could be indicated that there had been no breakage in the fuse, which

How the quarry cliff looked before the dynamite was exploded



Scale map of the Bound Brook Crushed Stone Co. quarry showing the quantities of dynamite loaded in the twenty-two drifts of the two tunnels

After the blast, investigators approach for a close-up of the destruction done

shows that "Cordeau-Bickford" fuse can be tested as easily as an electric wire. After testing the four loops, the ends were all connected together and one No. 6 electric exploder was attached, which did the trick.

This quarry is located on the New Jersey Central R. R. The stone is used for concrete, all kinds of road work and railroad ballast. This rock shows a crushing strength of 42,500 lbs. per sq. in. The tunneling and loading was supervised by the company's own men, with the assistance of the Atlas Powder Co.'s representatives. William J. Scott, demonstrator, was in charge of the work for the Atlas Co. After the tunnels were built they were surveyed by a local engineer, to ascertain the thickness of the walls and amount of burden to be lifted.

Big Blasts of Dynamite Rule in Penn's State

ENORMOUS BLASTS of dynamite in stone quarries of Pennsylvania have shaken that state in recent weeks, all a part of the program for quantity production.

At Monocacy near Birdsboro, the Birdsboro Stone Co. discharged 209 tons in the Trappe Rock Quarries. The holes were about 6¼ in. in diameter, 150 ft. deep, 29 in number and about 20 ft. apart. They were drilled 43½ ft. back from the face of the quarry. It is estimated 400,000 tons of rock were shattered; some of the dislodged material is as large as a wheelbarrow and cart.

The American Lime & Stone Co. set off a blast at Union Furnace in which 22,000 tons of high explosives were used. When it was touched off a whole mountain side fell out.

The largest quantity of dynamite ever set off in Lancaster county was by the Baurmaster Company of Lancaster at their quarry when a great boulder was shattered. Many thousands of tons of explosives were used.

Louis Rafetto, president of the Bath Portland Cement Co., Allentown, Pa., pressed a button at the quarry of the plant and exploded a large blast.

Holes drilled 105 ft. deep along a semicircle of 600 ft. were filled with powder. Upward of 100,000 tons of rock was dislodged, enough to make half a million barrels of cement. The shock of the explosion was felt fifteen miles.

Soda Ash Factories Enlarge Market for Limestone in Canada

ESTABLISHMENT of soda ash factories in Canada made urgent by the necessities of the war will extend the market for limestone as considerable quantities of both lime and carbon dioxide are used in the process of its manufacture. How extensive this market will become is indicated by the many uses of soda ash for which Canada is suffering.

The importance of this product in the life of any community ranks with that of pig iron. It is used everywhere. It has revolutionized the glass industry and helped to bring it to the present state of perfection. Now, besides being used in the manufacture of glass, it is used in the preparation of soap, paper chemicals, drugs, prints, leather, enamelware, cleansers, etc. Soda ash is also used in the textile industry, in dyeing operations, water softening, metallurgical operations, bottle and dish washing, refining of vegetable oils, metal working, prevention of timber mould, etc.

Besides these there are more or less domestic users of the product but there is another use which transcends all others. The allies need high explosives more than many other war munitions and soda ash plays an important part in the preparation of phenol as it is the basis for the manufacture of caustic soda which goes into carbolic acid.

Product Closely Guarded

The new industry which is being established at Amherstburg near Windsor, Ont., by a group of interests with which the Brunner-Mond concern is allied, will place another supply of this valuable product at the disposal of the Allies. Caustic soda and such materials are jealously guarded by the British Government lest they get into the hands of the enemy, and therefore exports from Britain are prohibited.

This is why Canadian firms manufacturing these products are urged to produce to the utmost capacity to supply the big Canadian demand as well as the demand from overseas. This is chiefly the reason why these interests are investing upwards of $3,000,000 in the plant which will eventually help meet the immense demand for soda ash.

This commodity has never been made in Canada; if it has been the extent of manufacture has not been great enough to attract attention. Canada has drawn her supplies hitherto from Great Britain and the United States but under existing conditions Canada is feeling the pinch and the situation has induced the group of interests concerned in this industrial development to locate a suitable site on which to erect a purely Canadian plant.

Raw Material Close By

Boat and rail facilities are not so essential as being close to raw materials, limestone and salt. These fortunately occur in close proximity to each other at Amherstburg. The limestone quarries are on the site of the proposed plant and the salt wells are about four miles away.

The management of the factory will be in the hands of Gordon S. Rutherford. Wallace Campbell is secretary-treasurer.

Railroad Men Will Study Granite Freight Rates

BARRE, Vt.—The trunk line district freight committee have appointed the following sub-committee to investigate and report on the matter of rates dependent upon declared or released value of property, as described in the circular of the Interstate Commerce Commission dated April 26, 1918:

J. B. Large, Pennsylvania Railway Co.; D. E. Gelatt, New York Central Lines; E. M. Snyder, C. R. of N. J. Railway; C. D. Waters, Montpelier & Wells River Railway. George Cassidy, Rutland Railway; George M. Wood, New York, New Haven & Hartford Railway.

As nearly all granite rates as well as very many merchandise rates are made upon a valuation basis, the question at issue is one of importance to this community.

Sulphite Mills Are Large Buyers of Rock

PETOSKEY, Mich.—The Petoskey Cement Co. of Petoskey, Mich., is finding a large outlet for its crushed stone at the sulphite mills. Early this month J. D. Jenssen of J. D. Jenssen & Co., New York, made a contract with the operators for 80,000 tons of crushed rock. Mr. Jenssen has found the Petoskey rock well suited for the sulphite mills in which his company is interested. The Cleveland Furnace Co. will use 120,000 tons of stone from Petoskey. Shipments will begin when water shipping facilities are completed.

The American's Duty

THE main duties of noncombatant Americans are to increase production, economize in consumption, lend your savings to the Government, and hold your Liberty Bonds.

Cost-Keeping for Crushed Stone Plants

Fourth Installment of a Series of Articles Based on the Practice of the General Crushed Stone Co., Easton, Penn.; Covers Distribution of Costs

PRECEDING articles in the issues of March 27, April 10 and May 8 have covered various phases of plant cost data collecting. This article deals with the very important subject of cost distribution. The notable thing here is the dependence placed upon the plant superintendents. Too often, perhaps for best results, a good deal of this cost distribution is taken out of the hands of the men who know the actual field conditions and left to office employes.

XIV. Cost Accounts

Titles of cost accounts, and expenditures covered by same fall under four main divisions: Pay Roll Operating Accounts, Pay Roll Plant Accounts, Material Operating Accounts and Material Plant Accounts.

The relation of these accounts to each other, and to the total cost is clearly shown on account charts which are furnished to each Works Office. All operating charges show against the earnings, and plant charges are capital invested and appear in the financial statement each month as assets. These are only made, therefore, for actual increased investment. All renewals and replacements of material, the first cost of which has already entered into the plant accounts must be shown under operating expenses as "Maintenance and Repair."

Pay Roll Operating Accounts

Breaking and Loading—This includes the labor cost from the time of shooting to placing of stone in the hopper; quarry track repair gangs; hoisting engineers and men on the trestle.

Cleaning Quarry—This is divided into three sub-headings which must be reported separately.

1. Stripping, i. e., cleaning the dirt from the top of the face in advance of the drillers and carting it away.

2. Cleaning Ledges; after a shot has been made, cleaning away of loose stone to make room for the drillers.

3. Cleaning Quarry: this covers work done in cleaning out and carting away of refuse and dirt in the quarry produced in the operations of drilling and breaking and loading.

Drilling—Men loading and shooting, large machine-drill operators, plug drill operators, any hand drilling done, tool boys, blacksmiths and helpers, also time used in sharpening tools.

Crushing—Men hooking stone, oilers, all regular employes around the crusher elevators, screens and bins, men loading stone in railroad cars.

Power—Engineers, firemen and all men employed in engine and boiler rooms, also unloading coal for the boiler room and attendants at pumps for water supply when necessary.

Maintenance and Repairs—Labor in the blacksmith shop not otherwise accounted for under drilling; all labor spent in renewals and repairs, and, in general, maintaining the equipment.

Superintendence and Expense—Salaries of Superintendent and time-keeper, clerks, watchmen and general foremen. Foremen whose time falls entirely under any of the above cost accounts are charged directly to the same.

Stable Maintenance—Stablemen and all other employes around the stable.

Stocking Stone—Labor cost of stocking stone. This includes crews of locomotive crane and dinkey engines employed solely on this work.

Loading from Stock—Cost of loading stone from stock whether by hand or machinery.

Farming—Cost of labor on the farm, covering superintendence, cultivation and harvesting, also maintenance and repair.

Whenever possible these sub-heads should be stated in the farm accounts.

Pay Roll Plant Accounts

Buildings—Labor erecting new buildings, such as structures which are new additions to the plant and not renewals or replacement of former buildings. Specify kind of building, whether employes' houses, engine house, thawing house, etc.

Construction—Cost of labor on foundations for machinery, installation of new pipe lines, belting, etc. All labor on reconstructing an old plant, when the construction covers practically a new plant, is chargeable to this account, for the reason that the cost of erection of the old plant is credited to the plant account on an estimate at the completion of the job. It is also removed from the plant value to a considerable extent through our depreciation accounts.

Material and Expenses—Are distributed to operating and plant as follows:

Plant accounts are Equipment, Machinery, Buildings, Construction, Live Stock and Real Estate.

Under Equipment are charged the first cost of all quarry cars, railway material in general, wagons, cart, harness, and other stable equipment, tools of permanent character, such as hoists, jacks, anvils, etc., counter shafting and pulleys, also all small tools in the equipment of blacksmith and carpenter shops, and for the repair gang generally.

No labor is charged to this account, except that expended in making new cars, carts, or tools generally; but no labor or material expended in replacements or repairs of any tool which has already entered into plant account are to be charged to this item. Such charges must appear under Maintenance and Repair (See Operating).

Machinery—This item covers first cost of all machines of every description, such as engines, boilers, compressors, drills, large and small, pumps, heaters, locomotives, etc. No replacements or repair parts are charged to this account. New shafting and pulleys forming a part of any machine such as engines, crushers, elevators, and conveyors are properly charged to this account.

When a new machine, such as a crusher, is bought, spare parts purchased with the machine are properly chargeable to plant account, under the head of equipment, but this is the only exception.

Buildings—Covers first cost of all buildings of permanent character, including excavation and cellar walls, in case of employes' houses, or foundations for engine houses or other buildings employed in operation. It also covers the complete equipment of such buildings for occupation or use, exclusive of machinery or tools.

Construction—Covers first cost of material for foundations for machinery, new pipe lines, and, in general, all material used in construction work, such as elevator framework and bins, but does not include any repairs or replacements to such structures.

In the case of tearing out an old building and rebuilding it, such material cost is reported as construction, and the salvage, if any, from the old plant, which is credited at an estimated value against the cost of the new plant.

Live Stock—Covers cost of horses, mules. Live stock for the farms falls under the head of "Farm Plant (Live Stock)."

Operating Accounts for Stone Plants

These cover Supplies, Fuel, Explosives, Stable Feed, Stable Maintenance, Maintenance and Repairs, Superintendence and Expense.

Under Stone Operating Accounts are classed as "Supplies" only oils, waste, grease, belt dressing, belt lacing, belt hooks, packing and babbitt used for journal boxes. Cheap babbitt used in place of

zinc for setting crusher concaves falls under the head of Maintenance and Repair.

Fuel—This includes gasoline or natural gas used for pumps, as well as coal, except that used in heating the thawing house and the office. Fuel used at the thawing house is charged to explosives. Coal used at the office is charged to Superintendence and Expense.

The amounts of coal used for the steam shovels, blacksmith shop, locomotive crane, large well drills, and everywhere outside of the boiler room or power house is shown separately in order that the proper charges can be made against these machines; but the whole is reported under "Fuel."

Explosives—Under this head come black powder, dynamite, caps, fuse, exploders, wire—both connecting and leader—batteries, and battery tester repairs, matches, and fuel used in heating the thawing house.

The first battery used to fire the shots is properly an "Equipment" charge. When repaired or renewed the cost falls under "Explosives."

Stable Feed—Includes hay, oats, corn, chop, bedding whether straw or shavings.

Stable Maintenance—Includes harness repairs, veterinary service, horse medicines and all stable up-keep, such as brooms, hay forks, etc.

The first cost of stable equipment, as explained, falls under plant equipment; and all renewals or repairs to same are charged to Stable Maintenance.

Maintenance and Repairs

We now come to Maintenance and Repairs, which includes the great bulk of the material costs. The sub-divisions of this item are clearly shown on the Account Chart.

M. & R. Cleaning Quarry—Includes repair material for the carts used on this particular job, shovels, and other small tools which are purchased entirely for doing this work. (See sub-classification under Pay Roll).

Breaking and Loading, M. & R.—This includes all repairs to quarry cars, quarry track, hoisting engines, skip cars, steam shovels, dinkey locomotives, inclines, crusher forms, and such small tools as stone forks, sledges, handles for same, crow bars, and in general, all material purchased for such work only.

Steam shovel repairs are classified by the make of the shovel they are for—Marion, Bucyrus, Thew, etc.—and if there is more than one shovel of each make at the plant, they should show the number which the shovel bears in our record, such as Marion (or M) Shovel No. 3. Bucyrus (or B) Shovel No. 1, etc.

In case of repairs to locomotives engaged in hauling around on the tracks under bins and miscellaneous work, they are not chargeable to this item. Included here are only repairs to the dinkey locomotives hauling stone from the steam shovels to the skip-hoist or crusher.

M. & R. Drills—Covers all drill repairs, drill steel, loading tools, etc. Under this

ACCOUNT CHART SHOWING CLASSIFICATION OF CHARGES.

- PLANT ACCOUNT. First Cost.
  - Equipment (see detailed instructions.)
  - Machinery " "
  - Buildings " "
  - Construction " "
  - Live stock " "
  - Real estate " "
  - Farm, real estate, equipment, machinery, buildings, live stock.
- GENERAL ACCOUNTS.
  - General expense.
  - Selling expense.
  - Interest and discount.
  - Insurance and taxes.
  - Accident reserve.
  - Fire insurance reserve.
  - Office furniture.
  - General office.
  - Phila. office.
  - Rock.
- OPERATING ACCOUNT.
  - SUPPLIES.
  - Fuel.
  - Explosives, including fuel cost of heating, thawing, house and labor, unloading dynamite.
  - Stable feed—Charge material grown on farm at the local prices.
  - Stable maintenance—Labor and material.
  - Breaking and loading—Steam shovel, pay roll.
  - Hand, pay roll.
  - Cleaning quarry—Regular, pay roll.
  - Stripping, pay roll.
  - Cleaning ledges, pay roll.
  - Drilling— Regular, pay roll.
  - Keystone, pay roll.
  - Power, pay roll.
  - Crushing, pay roll.
  - M. & R.
    - CRUSHING.
    - Crushers (state kind of crusher).
    - Elevators.
    - Screens.
    - Conveyors.
    - Sundries—Material used for above crushing machinery.
    - DRILLING.
    - Ingersoll (or specify maker's name)—all except plug or Keystone drills.
    - Plug Drills.
    - Keystone drills.
    - Sundries—Hose, steel, etc. These sundries should be charged to the class of drills to which they will eventually go.
    - POWER.
    - Engines.
    - Compressors.
    - Boilers.
    - Pumps.
    - Transmission — Covers, pipe and fittings (up to drills), main shafting and belting.
    - BREAKING AND LOADING.
    - Steam shovels (state kind).
    - Locomotives.
    - Cars (state whether shovel or hand).
    - Sundries.
    - CLEANING QUARRY.
    - See above under pay roll.
    - GENERAL.
    - Buildings.
    - Sundries—Pay roll falls under this head, except specially instructed.
  - S and E—Pay roll and material.
  - Stocking (or wasting) stone, pay roll and material.
  - Loading stone from stock, pay roll and material.
  - Farm, covers cultivating, reaping, repairs, expense, pay roll and material.

item you are specified class of drills, such as Ingersoll (large) drills, plug drills, well drills, and, at the end of the year, a report is required showing the plant record of all repairs to each particular drill, together with the output of each drill in feet.

Repairs to the Leyner drill sharpener and such tools fall under this head. Such are specified as "Drill sharpeners."

M. & R. Power—Includes repairs to all boilers, pumps, engines, compressors, steam lines and air lines right up to the drills. Repairs on these air lines fall under power until the air is actually delivered to the drills when the repair cost is taken up by the drill item.

All material used in the engine, boiler and pump room, except that falling under the head of "Supplies" is charged to M. & R. Power.

The engine repairs are reported as M. & R. Power Engines. If more than one engine is in use, the name of the engine make, such as Erie, Atlas, Ball, or other are given.

Compressor repairs are reported similarly, under the head of compressors, and pipe lines under the head of M. & R. Power Transmission.

Belt and shafting repairs and replacements also come under the head of "Power Transmission."

Repairs to pumps used for draining the quarry only, or any other purpose other than boiler supply, fall under the head of the special work the pump performs, such as cleaning quarry, or stripping, in the case of hydraulic stripping. such as we are doing at Glen Mills.

M. & R. Crushing—Covers all materials for repairs to the crushers, elevators, screens bins and conveyors and used for general repairs around the crusher house, not directly chargeable to any of the above crushing items. Such repair items are classed as M. & R. McCully Crusher, M. & R. Gates Crusher, M. & R. Morris Crusher, M. & R. Symons Crusher, etc., M. & R. Bins, M. & R. Elevators, and so on, so that a close track is kept on the repair cost of each class of this machinery.

Locomotives employed in drilling cars from under the bins do not properly fall under the head of crushing repairs, as the charge to crushing does not apply on stone after delivery from the bins into the cars. It would be proper therefore to report repairs to such locomotives separately, under the head of the locomotive number—giving number, assigned to the particular locomotive.

Locomotives and locomotive cranes which are used for various purposes, such as stocking stone, repairs, handling heavy machinery, etc., should be kept out of the above classifications and reported under the head of "Locomotive and Locomotive Crane" or "L. & L. C."

M. & R. Buildings—Includes all material for the up-keep and repair of buildings completely erected and occupied by tenants or in use for operations.

M. & R. General—Covers all repair material which does not properly fall under any of the above headings.

S. & E. Material—Covers all material and expense not applicable to M. & R. Account, such as heat and light for offices and shops, stationery and office sundries, telephone bills, etc.

S. & E. Disability—This is a new charge, which took effect January 1, 1916, and covers all expenditures formerly charged against Accident Reserve, except as under Paragraph "S. & E. Material." All payments made to injured employes covering partial reimbursements for time lost during the first two weeks of disability, are charged to this account.

In the cases of salaried men who are not taken off the pay roll, as soon as disability commences, their time is charged on the time sheet to S. & E. Disability. As soon as such disability ends, their time is charged under the regular charge covering the work they are doing.

The method of handling all accident cases is explained more fully under the instructions drawn up covering accidents alone.

Taxes, Accident Reserve and Fire Insurance Reserve—These are general or overhead charges and are not applicable to any one plant. Under item "Taxes" are reported money expended for Documentary Revenue Stamps as well as any taxes paid locally. All taxes are paid from Main Office.

Under item "Accident Reserve" are reported expenditures for First-Aid Outfits and other medical supplies, which cannot be billed to insurance companies in which the company is insured.

Under item "Fire Insurance Reserve" are reported all expenditures for protection against fire such as hose, pipe lines, renewals of extinguisher charges, etc.

XV. Repair Stock in General

When a stock room is provided and considerable material is carried there during the year, especially drill parts and sundries for the elevators, screens, crushers, etc., it is desirable to show this by the word

COST

ACCOUNTS	AMOUNT P. R.	AMOUNT MTL.	PER TON P. R.	PER TON MTL.	REMARKS
GENERAL— Gen. Expense					
Selling					
Int. and Disc.					
Ins. and Taxes					
TOTAL					
OPERATING—Depreciation					
Accident Res.					
Fire Ins.					
TOTAL					
Supplies					
Fuel					
Explosives					
Power					
Bkg. and Ldg. Shovel					
" " " Hand					
Clg. Quarry Reg.					
" " Strpg.					
" " Clg. Lgs.					
Drilling					
Ft. @					
Crushing					
M. & R. Gen.					
Rent and Royalty					
S. & E.					
Stocking					
N. Tons @					
Loading from stk.					
N. Tons @					
TOTAL					
GRAND TOTAL					

	QUARRY CARS	Tons Per Car	NET TONS	TOTAL NET TONS	TOTAL NET AMOUNT	PER TON	TOTAL NET AMOUNT	PER TON
OUTPUT—Stone Shipped								
" "								
" Wasted								
" Used M'f'g Am.								
Stone on Hand								
Stone Stocked								
Stone from Stock								
Stone on Hand								
Product—Shovel								
" Hand								
Sundries								

OPERATING HRS. IDLE HRS

REPORT OF PLANT FOR 191

One of the costkeeping forms of the General Crushed Stone Co.

"Stock" placed after the repair charge.

Until a complete stock house system is installed, it is difficult to keep track with any accuracy of the variations in stock during the year. It is necessary to depend upon the inventories made at the beginning of the year. Therefore, the importance of having such inventory show the stock on hand as accurately as possible is evident. The difficulty about this method is that it throws a very large sum into the cost of one month instead of distributing it over the months in which it is incurred.

XVI. Employe's Cards

As soon as a man is given employment an employe's card must be filled out giving all the information asked for. Two copies of such card are made, one for the Main Office and one for the plant records.

When a man leaves the employ of the company, the date of his leaving and reasons are noted on his card. This information is forwarded promptly to the Main Office, so that the cards at the Main Office may be kept fully up to date. In cases where men are laid off only temporarily on account of the shutting down of the plant or during the closed season, this information is also noted on the card and such information forwarded to the Main Office. Upon his return to work it is unnecessary to make out a new card but it is necessary to note on his old card the date of his return, which information is forwarded to the Main Office. When a man leaves and it is not known whether he intends to return or not, the information asked for is sent in as soon as possible.

Steam Shovel Dippers and Their Relation to Crushers

THE following table has been prepared by the Traylor Engineering and Manufacturing Co. with the idea in view of imparting information that will serve as a guide to those who already use a steam shovel in their quarry but desire a new preliminary jaw crusher, as well as those who have a large preliminary crusher but require a steam shovel.

The dimensions of the largest stone that a given size dipper will handle are those of a stone which will pass through the dipper, and the crushers recommended are the smallest which will properly handle the stone without regard to capacity.

DATA TABLE

Rated capacity of dipper in cubic yards	Size of stone, inches	Size of jaw crusher, inches	Size of gyratory, inches
5	48x60	60x84	54
4	48x57	60x84	48 or 54
3½	44x50	48x60	36 or 48
3	40x48	48x60	36 or 48
2½	36x48	36x60	30 or 36
2	33x45	36x60*	24 or 30*
*1¾	33x45	30x48*	21 or 24*
*1½	30x36	30x48*	21 or 24*

The crushers marked with a * have a greater capacity than steam shovels equipped with 2, 1¾ and 1½ cubic yard dippers.

National War Savings Day is only one day; our men in the Army and Navy have their day every day.

Prosperous Limestone Quarry in Louisiana

Southern Mineral Co. Developing Valuable Property

IT SEEMS to be generally unknown in other parts of the country that there is a limestone outcrop in Louisiana. This property, 4½ miles west of the town of Winnfield, in Winn Parish and nearly the geographical center of the state, has been termed by Gustav Grossman, geologist and mining engineer, the largest individual deposit of high-grade limestone he has seen in the United States or Canada.

Covers 50 Acres

The limestone outcrop is on the property of the Southern Mineral Co. and covers approximately 50 acres and is the only deposit of commercial size in the state. The Geographical Survey of Louisiana, Bulletin No. 5, by Dr. G. D. Harris, says: "As a limestone for burning to quick lime and as an important ingredient for cement and soda ash manufacture its value is great. By comparatively little stripping limestone rocks could be exposed for a distance of half a mile in a N-E S-W direction, from ⅛ to ¼ of a mile in a N-W S-E direction."

Gustav Grossman, in his report on the property, states: "The outcrops were traced sufficiently far to allow an approximate estimate of the probable available quantity of limestone contained in this dome. There is beyond all question vastly more material than could be utilized for any industrial purpose in 50 years. For the manufacture of quick lime, soda ash, with its numerous chemicals as by-products, the limestone is of unquestionably great economic value. A very extensive deposit of rock salt will be found at a depth of 220 ft. beneath the limestone."

Now Make Ground Limestone

Until about three years ago the company confined its operations to the production of crushed stone for concrete, ballast and road building—also riprap for Government river work. A pulverizer was installed in 1915 and a salesman sent out to sell ground limestone for agricultural purposes, and assisted by state and Federal agricultural agents he initiated a campaign of education among the farmers on the use of lime, and of ground limestone in particular. From this small beginning the company has reached a point where it cannot supply the demand for this commodity with two pulverizers and is now preparing to purchase the necessary equipment to double the present capacity. It is also laying plans for the erection of a lime kiln at Shreveport, where natural gas can be utilized at a price equivalent to 90-cent coal.

A sample of the rock, burned in a crude manner was submitted to the chemist of the New Orleans Sewerage and Water Board (users of several thousand tons of lime yearly), and he reported as follows:

I submit herewith analysis of sample of lime made from your Winnfield stone and received at this office April 15, 1918:

Calcium oxide (CaO)	96.91
Silica (SiO)	0.70
Iron and alumina (Fe_2O_3)	0.70
Oxide (Al_2O_3)	....
Magnesia oxide (MgO)	1.23
Sulphur trioxide (SO_3)	0.47
	100.01%

This analysis indicates that the stone is a very pure limestone, and the lime produced of a very high quality. The sample of lime tested was very free slacking, which I believe to be a distinct advantage, especially where the lime is used for chemical purposes, such as sugar making, silica brick manufacture, soap making and water purification. This lime is also low in foreign matter—i.e., silica, iron and alumina oxides, magnesia and sulphuric anhydride. All of these constituents are below the limits set in the specifications of the Sewerage and Water Board of New Orleans for lime for water purification, which requires a high grade lime.

(Signed) J. L. PORTER,
Sanitary Engineer and Chemist.

Material Is Approved

As to the value of the material for road building and concrete, the following is from a letter received from Duncan Buie, head of the State Highway Department, in connection with the use of the stone on the military road recently constructed between Camp Beauregard and Alexandria, La.: "The Highway Department has just finished construction work on 4½ miles of road leading from Alexandria to Camp Beauregard, in Rapides Parish and have used for the base of this construction crushed limestone. We take pleasure in stating to you that this material has proven entirely satisfactory in every respect and has met all the requirements that we had contemplated for it. We have also used your material in concrete construction and find it to be exceptionally good for this character of construction."

(Signed) DUNCAN BUIE,
State Highway Engineer.

Capacity 400 Tons

The plant of the Southern Mineral Co. has a capacity of about 400 tons of crushed rock per day, which it is expected to increase within the next few months to 600 tons, for the company is unable to take care of the present demand for the stone. The current prices for crushed stone range from $1.40 to $2 per ton and for pulverized agricultural limestone $3 per ton.

War Savings Day June 28

REMEMBER that National War Savings Day is June 28. Pledge yourself on or before that day to save to the utmost of your ability and to buy War Savings Stamps that there may be more money, labor and materials to back up those who fight and die for you.

Simple Cost Keeping System for Sand and Gravel Plants

How Richardson Sand Co. Finds Its Net Costs and Profits, Explained by R. P. Duffy

R. P. DUFFY, secretary of the Richardson Sand Co., of Chicago, has developed a system of figuring costs for his company's sand and gravel business, which is simplicity itself and which provides an easy and economical method for ascertaining net and gross costs and net and gross profits per ton. It just as readily discloses the gross and net totals of these items by the week or month. His monthly report blank prepared for the purpose tells concisely and at a glance all the information of the kind wanted.

First Find Three Totals

In the following lucid and compact statement, Mr. Duffy explains his system:

"1. Take Total Sales for month, deduct from same freight on same, and the balance is Total Net Sales at Pit for month.

"Take Total Pit Expenses, for same month, which includes, payrolls, royalty or depletion of property, fuel, depreciation of plant, repairs, replacements such as machinery parts, belts, etc., telephones, postage, stationery and interest on investment; added together the result is Total Expense at Pit for month.

"Figure up output for same month, either in tons or yards, of materials produced.

To Find Net Costs and Sales

"2. Divide Total Expense at Pit for month, by number of tons or yards produced and result is the Cost Per Ton or Yard at Pit.

"Divide Total Net Sales at Pit for month by number of tons, or yards produced and result is the Net Sales Per Ton or Yard at Pit.

Administration Expenses

"3. Total Administration Expenses, such as salaries, office rents, phones, salesmen expense, postage, stationery, taxes, etc.

"Divide Administration Expense by the number of tons or yards produced and the result is the Administration Expense Per Ton or Yard.

Net Profits

"4. Net Sales Per Ton or Yard at Pit, less Cost Per Ton or Yard at Pit, gives the Net Profit Per Yard or Ton at Pit.

"From Net Profit Per Ton or Yard at Pit, deduct Administration Expense Per Ton or Yard and result is Net Profit Per Ton or Yard.

Ascertaining the Monthly Net Profit

"5. Multiply Net Profit Per Ton or Yard by number of tons or yards produced and result is Net Profit for Same Month."

A reference to the Monthly Report blank printed herewith will show clearly when studied in connection with Mr. Duffy's explanation how condensed and complete his system is.

Provision is made on the blank for finding the Plant Cost, the Net Sale and the Chicago Expense per yard by diagrams that

MONTHLY REPORT
SALES, EXPENSES, PROFITS, LOSSES, PRODUCTION, ETC.

PLANT_____ MONTH OF_____

	(EXPENSES) DEBITS	(SALES) CREDITS
SALES, Net, at Plant		
PAYROLL		
ROYALTY		
FUEL		
DEPRECIATION		
EXPENSES, Repairs, etc.		
TOTALS,		

TOTAL EXPENSES, AT PLANT, $

Yards Produced	Plant Expense $	Plant Cost per Yard $

TOTAL SALES, AT PLANT, $

Yards Produced	Sales at Plant $	Net Sale per Yard at Plant $

CHICAGO EXPENSE, $

Yards Produced	Chicago Expense $	Chicago Expense per Yard $

NET SALE PER YARD AT PLANT $

PLANT COST PER YARD $

NET PROFIT PER YARD AT PLANT $

CHICAGO EXPENSE PER YARD $

NET PROFIT PER YARD $

Yards Produced. — Net Profit per Yard. — TOTAL NET PROFIT FOR MONTH
x = $

Form prepared by Mr. Duffy for the Richardson Sand Co.

every school boy readily recognizes as examples in long division. The bottom line is an example in multiplication, the result of which should coincide with the total net profits shown in the books.

System of Bookkeeping

Mr. Duffy also gives this summary of his system of bookkeeping:

"Customer's order is booked and sent to the pit. The pit reports shipments daily to the main office. A postal notice is mailed to the customer, showing date of shipment, initials, car number, contents and destination. The shipment is then charged to the customer's account, the loose leaf invoice system being used.

"Invoices show date of shipment, initials, car numbers, contents, destination, weight, tons or yards, price and extensions. A duplicate invoice is kept on file in the office. The date and extensions are posted to sales ledger.

"The customer returns invoice with freight receipts for credit and his check, which are credited to his account; sales ledger is balanced; invoice is receipted and returned to customer."

What Empire State Holds in Sand and Gravel

Abstract of Report of Director of State Museum, D. H. Newland, on Mining and Quarry Industry of New York

THE SAND AND GRAVEL industry is represented in every section and nearly every county of New York state. The deposits of these materials are so widespread that usually the ordinary demands of each community, so far as building purposes are concerned, can be met from supplies close at hand.

The sand and gravel beds of the State belong mainly to the Pleistocene formations, accumulated as the result of the great ice invasion which moved from north to south and reached as far south as northern New Jersey and Pennsylvania. This ice sheet swept the rocks bare of their former mantle of disintegrated material and in its place left a covering of transported boulders, gravels, sands and clays.

Intermixed Deposits of Little Value

These deposits, when laid down directly by the ice as ground moraine, are so intermixed as to have little or no industrial value. Such unmodified drift covers a considerable portion of the area, especially of the hilly country; in the valleys and lowlands the ground moraine has been removed by stream action or concealed below beds of sorted gravels and sands that were laid down in bodies of standing water whose existence in most cases was incidental to the flooded waters of the Glacial period.

In some of the larger valleys like the Hudson, Champlain and Genesee, as well as in numerous smaller ones, the glacial waters were held imprisoned for a time by dams so that they stood high above the present levels, and the sands and clays are revealed today in a series of terraces of great thickness and well-sorted arrangement.

Beach Sands of Economic Importance

Beach sands are found on the shores of many of the interior lakes and around Oneida lake in particular are of considerable economic importance. These are characterized by a degree of uniformity and purity which make them valuable for many purposes, like glass-making, molding, etc. The most valuable sand beaches, however, occur on Long Island where most of the supply of building sands for New York and vicinity is obtained.

The information as to the production of sand and gravel collected for this report gives probably a fairly close approximation of the business, and for certain branches is very reliable, but it is not claimed that it is complete.

Production of Sand and Gravel in New York.

Material	1914	1915	1916
Building sand	$1,151,521	$1,185,812	$ 941,884
Molding sand	310,727	415,073	570,898
Fire and core sand	23,944	24,797	† 16,430
Other sand‡	75,000	75,000	134,638
Gravel	650,895	965,336	980,979
Total	$2,212,087	$2,666,018	$2,644,829

‡Includes engine sand, paving, glass, railroad ballast and a small amount of miscellaneous sand.

†Represents fire sand alone.

Reliable Figures Hard to Obtain

The figures for building sand and gravel are perhaps the least reliable, and understate the actual business perhaps as much as 15 per cent of the total output in any one year. The operations in building sand are so widely scattered and often of so fugitive nature that it is impossible to keep abreast of all the developments and changes in the industry that take place.

On the other hand, the data on molding sand are measurably full and the statistics can be accepted as being as accurate as those in many other lines of the mineral industry. This branch of the trade has a stable basis and is restricted to a limited area, mostly in the Hudson River valley.

Production in 1916

The total quantity of building sand (for concrete and mortar) reported in 1916, for which the value alone is given in the table, was 4,331,603 short tons. In the preceding year the compilation was based on cubic yards, of which the reported quantity was 4,127,508, equivalent to about 5,000,000 tons. The drop in the production thus shown was owing to the dullness of the building trade, a condition that obtained all over the State as the result of the general situation brought on by the war.

Nassau county, from which the New York market derives its supply, produced 3,044,359 tons valued at $578,945. The industry there is controlled by a few corporations who dredge the sand from shallow waters or excavate it by steam shovels from the exposed beaches. The sand is screened and loaded on barges.

Improvement in Molding Sand Business

The output of molding and core sand in 1916 was 661,673 short tons valued at $570,898, against 454,511 short tons worth $415,073 in the preceding year. The business experienced a decided improvement, compared with the conditions in 1915, from the extraordinary activity in the metal industries.

Most of the molding sand comes from the Hudson valley, from Rensselaer and Saratoga counties on the north to Dutchess and Ulster counties on the south. The material represents a special form of the fine sands, which with the brick clays, were laid down in the expanded waters that occupied the valley at the close of the ice invasion. The molding sand layer consists of the uppermost weathered layer from a few inches to several feet thick.

Other Sands

Among other kinds of sand that were produced in the State may be mentioned abrasive and grinding sand, 169,737 short tons, valued at $46,900; fire or furnace sand, of which the output amounted to 38,144 short tons, valued at $16,430; engine sand, 66,497 short tons, valued at $30,144; paving sand, 83,671 short tons, valued at $29,282; and various other uses 17,862 short tons, valued at $5,325.

The production of gravel for roofing, concrete and other uses amounted to 2,728,910 short tons, of a total value of $1,003,966.

New Glass Sand Company

Hagerstown, Md.—"The Round Top Glass Co., Inc.," has been organized here by F. Wilbur Bridges, Charles J. Spaulding, Hagerstown, and Charles Dougherty, York, to mine glass, building and concrete sand at Hancock. It is capitalized at $75,000.

The new company has absorbed the old Round Top Glass Sand Co., and will erect a new mill at Round Top and expend about $20,000 for new machinery.

Duty of Employers in the Reconstruction of Crippled Soldiers

Study Your Industries to Know Where You Can Use Returned Soldiers—Published at the Request of the American Red Cross

By Douglas C. McMurtrie,
Director Red Cross Institute for Crippled and Disabled Men, New York City

WE MUST count on the return from the front of thousands of crippled soldiers. We must plan to give them on their return the best possible chance for the future.

Dependence cannot be placed on monetary compensation in the form of a pension, for in the past the pension system has proved a distinct failure in so far as constructive ends are involved. The pension has never been enough to support in decency the average disabled soldier, but it has been just large enough to act as an incentive to idleness and semi-dependence on relatives or friends.

The only compensation of real value for physical disability is rehabilitation for self-support. Make a man again capable of earning his own living and the chief burden of his handicap drops away. Occupation is, further, the only means for making him happy and contented.

European Training Schools

Soon after the outbreak of hostilities the European countries began the establishment of vocational training schools for the rehabilitation of disabled soldiers. They had both the humanitarian aim of restoring crippled men to the greatest possible degree and the economic aim of sparing the community the burden of unproductivity on the part of thousands of its best citizens. The movement had its inception with Mayor Edouard Herriot of the city of Lyons, France, who found it difficult to reconcile the desperate need for labor in the factories and munition works while men who had lost an arm or a leg but were otherwise strong and well were idling their time in the public squares. He therefore induced the municipal council to open an industrial school for war cripples which has proved the example and inspiration for hundreds of similar schools since founded throughout France, Italy, Germany, Great Britain and Canada.

The disability of some crippled soldiers is no bar to returning to their former trade, but the injuries of many disqualify them from pursuing again their past occupation. The schools of training prepare these men for some work in which their physical handicap will not materially interfere with their production.

The education of the adult is made up largely of his working experience. The groundwork of training in his past occupation must under no circumstances be abandoned. The new trade must be related to the former one or be, perhaps, an extension or specialization of it. For example, a man who had done manual work in the building trades may by instruction in architectural drafting and the interpretation of plans be fitted for a foreman's job, in which the lack of an arm would not prove of serious handicap. A trainman who had lost a leg might wisely be prepared as a telegrapher, so that he could go back to railroad work, with the practice of which he is already familiar.

Whatever training is given must be thorough, for an adult cannot be sent out to employment on the same basis as a boy apprentice. He must be adequately prepared for the work he is to undertake.

The one-armed soldier is equipped with working appliances which have supplanted the old familiar artificial limb. The new appliances are designed with a practical aim only in view; they vary according to the trade in which the individual is to engage. For example, the appliance for a machinist would be quite different from that with which a wood turner would be provided. Some appliances have attached to the stump a chuck in which various tools or hooks can interchangeably be held. The wearer uses these devices only while at work; for evenings and holidays he is provided with a "dress arm" which is made in imitation of the lost natural member.

Sentimental Sympathy Not Wanted

An important factor in the success of reeducational work is an early start, so that the disabled man shall have no chance to go out unemployed into the community. In even a short period of exposure to the sentimental sympathy of family and friends, his "will to work" is so broken down that it becomes difficult again to restore him to a stand of independence and ambition. For this reason, therefore, the plan for his future is made at as early a date as his physical condition admits, and training is actually under way before the patient is out of the hospital.

In the readjustment of the crippled soldier to civilian life, his placement in employment is a matter of the greatest moment. In this field the employer has a very definite responsibility.

But the employer's duty is not entirely obvious. It is, on the contrary, almost diametrically opposite to what one might superficially infer it to be. The duty is not to "take care of" from patriotic motives, a given number of disabled men, finding for them any odd jobs which are available, and putting the ex-soldiers in them without much regard to whether they can earn the wages paid or not.

Yet this method is all too common. A local committee of employers will deliberate about as follows: "Here are a dozen crippled soldiers for whom we must find jobs. Jones, you have a large factory; you should be able to take care of six of them. Brown, can you not find places for four of them in your warehouse? And Smith, you ought to place at least a couple in your store."

Such a procedure cannot have other than pernicious results. In the first years of war the spirit of patriotism runs high, but experience has shown that men placed on this basis alone find themselves out of a job after the war has been over several years, or, in fact, after it has been in progress for a considerable period of time.

A second weakness in this method is that a man who is patronized by giving him a charity job, comes to expect as a right such semi-gratuitous support. Such a situation breaks down rather than builds up character, and makes the man progressively a weaker rather than a stronger member of the community. We must not do our returned men such injury.

Permanently Useful Jobs

The third difficulty is that such a system does not take into account the man's future. Casual placement means employment either in a make-shift job as watchman or elevator operator such as we should certainly not offer our disabled men except as a last resort—or in a job beyond the man, one in which, on the cold-blooded considerations of product and wages, he cannot hold his own. Jobs of the first type have for the worker a future of monotony and discouragement. Jobs of the second type are frequently disastrous, for in them a man, instead of becoming steadily more competent and building up confidence in himself, stands still as regard improvement and loses confidence every day. When he is dropped or goes to some other employment the job will have had for him no permanent benefit.

Twelve men sent to twelve jobs may all be seriously misplaced, while the same

twelve placed with thought and wisdom and differently assigned to the same twelve jobs may be ideally located. If normal workers require expert and careful placement, crippled candidates for employment require it even more.

The positive aspect of the employer's duty is to find for the disabled man a constructive job which he can hold on the basis of competency alone. In such a job he can be self-respecting, be happy, and look forward to a future. This is the definite patriotic duty. It is not so easy of execution as telling a superintendent to take care of four men, but there is infinitely more satisfaction to the employer in the results, and infinitely greater advantage to the employee. And it is entirely practical, even in dealing with seriously disabled men.

Not Disqualified for Many Jobs

A cripple is only debarred by his disability from performing certain operations. In the operations which he can perform, the disabled man will be just as efficient as his non-handicapped colleague, or more so. In the multiplicity of modern industrial processes it is entirely possible to find jobs not requiring the operations from which any given type of cripples are debarred. For such jobs as they can fill the cripple should be given preference.

Cripples Hold Important Jobs

Thousands of cripples are now holding important jobs in the industrial world. But they are men of exceptional character and initiative and have, in general, made their way in spite of employers rather than because of them. Too many employers are ready to give the cripple alms, but not willing to expend the thought necessary to place him in a suitable job. This attitude has helped to make many cripples dependent. With our new responsibilities to the men disabled in fighting for us, the point of view must certainly be changed. What some cripples have done, other cripples can do—if only given an even chance.

The industrial cripple should be considered as well as the military cripple, for in these days of national demand for the greatest possible output there should not be left idle any men who can be made into productive workers.

With thoughtful placement effort, many men can be employed directly on the basis of their past experience. With the disabled soldiers who profit by the training facilities the Government will provide, the task should be even easier.

This, then, constitutes the charge of patriotic duty upon the employer:

To study the jobs under his jurisdiction to determine what ones might be satisfactorily held by cripples. To give the cripples preference for these jobs. To consider thoughtfully the applications of disabled men for employment, bearing in mind the importanec of utilizing to as great an extent as possible labor which would otherwise be unproductive. To do the returned soldier the honor of offering him real employment, rather than proffering him the ignominy of a charity job.

If the employer will do this, it will be a great factor in making the complete elimination of the dependent cripple a real and inspiring possibility.

Building Material Interests Must Have Help

Cement and Other Producers Unable to Meet Labor Scale of Plants Working Directly on Government Orders—Seek a Dictator?

NEW YORK—The building interests throughout the country and especially in New York and vicinity have been trying to keep up supply sufficient to meet Government and private building demand and at the same time hold their yard and mill labor in the face of the very much higher scales offered by neighboring ship yards and munition plants having direct Government orders.

Their efforts have proved unavailing, however, and coupled with heavier drafts of men for army and naval purposes have about reached the conclusion that the only way they can hope to meet present and peace time demands is for the administration to either name a building material dictator or administrator or to grant some form of subsidy to the building industries, says The Dow Service Daily Building Reports today.

In fact, there have been reports for some time in the building and allied trades that the Administration at Washington is considering such a course in the light of almost certain stringencies that are sure to develop if the war continues. Even if it stops, the whole world will come to America for its building material supply and that would absorb the entire manufacturing capacity of plants catering to construction needs throughout the United States.

The situation is all the more acute because of the growing realization that this country's industries are not capable of supplying world markets without expending their plant capacities and this means new building construction. Without fuel and sufficient labor and classed as a nonessential, thereby finding it difficult to obtain either cash or credits from banking institutions, the building material interests of the country are facing a situation that, they feel, requires immediate consideration if the Government building program is going to continue to absorb not only current outputs but all its reserve stock besides Government shipyards are able to pay wages that the Lehigh and Hudson district cement mills cannot pay, and, in fact, all departments are facing a most serious situation which will reach a stage of acute aggravation by next spring unless there can be arranged some plan of protection or co-ordination in the remainder of the rapidly waning season.

Use Motor Trucks to Haul Crushing Plant

OWING to railroad conditions a rock crusher, sifting bins, tractor roller and other material required in the crushing plant of the city of Dayton, Ohio, were brought overland 100 miles from Spade, Ohio, two weeks ago. Motor trucks were used.

Help the Postal Service: Save Stamps

OWING to the enormous increase of government war work the governmental departments at Washington are being flooded with letters of inquiry on every conceivable subject concerning the war, and it has been found a physical impossibility for the clerks, though they number an army in themselves now, to give many of these letters proper attention and reply.

There is published daily at Washington under authority of and by direction of the President, a government newspaper—The Official U. S. Bulletin. This newspaper prints every day all of the more important ruling, decisions, regulations, proclamations, orders, etc., etc., as they are promulgated by the several departments and the many special committees and agencies now in operation at the National capital. This official journal is posted daily in every postoffice in the United States, more than 56,000 in number, and may also be found on file at 11 libraries, boards of trade and chambers of commerce, the offices of mayors, governors and other federal officials.

By consulting these files most questions will be found readily answered; there will be little necessity for letter writing; the unnecessary congestion of the mails will be appreciably relieved; the railroads will be called upon to move fewer correspondence sacks, and the mass of business that is piling up in the government departments will be eased considerably. Hundreds of clerks, now answering correspondence will be enabled to give their time to essentially important war work, and a fundamentally patriotic service will have been performed by the public.

NEW MACHINERY AND EQUIPMENT

Portable Box-Car Loader Run By Electric Power

A DEVICE designed to load bulk material like ground limestone, sand, gravel, etc., has been placed on the market by the Ottumwa Box Car Loader Co., Ottumwa, Ia.

The machine, illustrated herewith, is operated only by electric power and uses from a 7½ to 11-hp. motor, depending somewhat on how heavy a material the machine has to handle and also depending on how fast the material is delivered to the loader. The loader, it is claimed, will load either wet or dry sand or gravel.

Is Clamped to Car Door

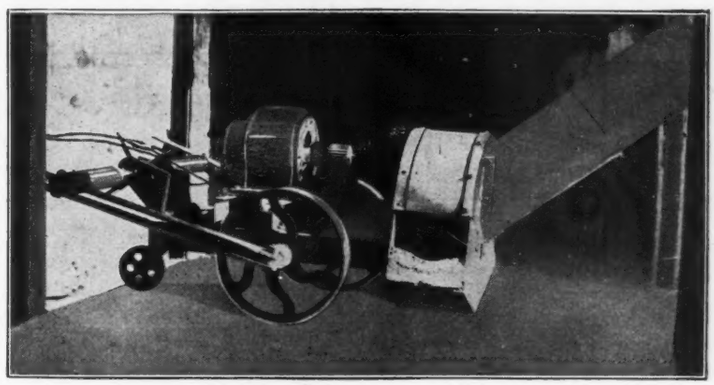
The machine is mounted on a pair of wheels, which makes it portable. When a car is ready to load the machine is simply wheeled into the doorway of the car and by spinning a small wheel, a right and a left screw clamp the handles of the machine to the door jambs of the car, holding it rigidly in position.

The material to be loaded is then dropped by a gravity chute into the receiving chamber of the loader. This chute is at a height of some 3 or 4 ft. about the car floor and therefore the sand or gravel must be delivered to the chute at this height. The material falls against a revolving paddle which distributes it the full half length of the car.

Needs Little Attention

It is not necessary for the operator to give any further attention to the machine after starting, until it is time to reverse the motor and start the loading of the opposite end of the car. To direct the flow of the material there is a baffle plate door on the side of the machine by means of which the material may be loaded close to the floor near the center of the car, or it may be thrown far out into the end of the car.

The operating parts are a heavy cast-steel paddle and its driving mechanism. The material is thrown to either side by changing the direction of the revolving paddle. In handling fine-ground limestone or other dust, the car doors would, of course, have to be temporarily sealed with paper or cloth to prevent some of the dust being lost outside.



Electrically operated loader made by the Ottumwa company

Yearwood unloader fastened to car

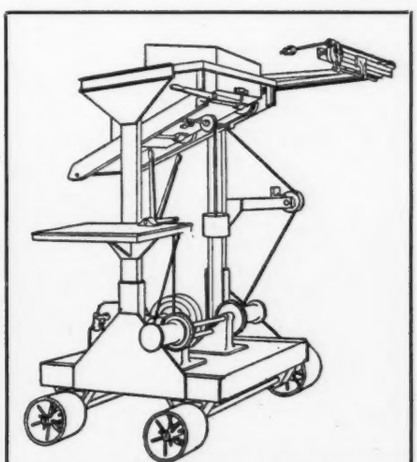
Unloader for Gondola Cars

J. R. YEARWOOD, Sales Manager of the Bluffton-Lewisburg Stone Co., Lima, Ohio, has perfected and patented a new car unloading device, which is shown in the accompanying illustrations.

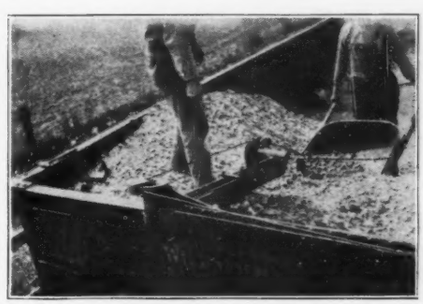
The new machine is made in two types, one that is temporarily fastened to the end of the car, the other made portable by being mounted on a wheeled truck. The machine is a drag-line scraper operated from a cantilever arm or crane. The hauling line can be operated by a horse or by power. One man is required to guide the scraper.

The scraper or shovel is drawn toward the end of the car, where it is hoisted on the cantilever arm, which is set to dump the load into a chute leading to a wagon or truck. An automatic tripping device dumps the scraper bucket when it has been lifted to the dumping position. With the portable device on wheels the process is the same except that the scraper bucket is dumped into a hopper.

The Yearwood unloader is claimed to empty a 50-ton car in two hours. The scraper bucket or scoop holds about 10 cu. ft., but of course can be made in any size to suit the weight of the material to be handled or the power to be employed for its operation.



The portable unloader with hopper



A Yearwood pulling the scraper

The Rock Products Market

More Concrete Ships Ordered

AMERICA'S first quantity output of concrete ships will be a fleet of tankers for the fuel oil trade. There will be 14 of them, aggregating 105,000 tons. Plans for these additions to the merchant marine have been announced by the concrete ship division of the Shipping Board. The concrete ship program also has been enlarged to provide for the construction of four smaller vessels, aggregating 12,500 tons, and 40 additional ones of 7,500 tons each.

Cut Stone Contractors Form Organization

THE American Cut Stone Contractors' Association was organized in Chicago recently, for the fostering of the cut stone trade, promotion of friendly intercourse between members.

Arthur V. Jones, Minneapolis, was elected president; S. M. Lederer, St. Louis, vice-president; Charles G. Fanning, Chicago, treasurer; Mastin Simpson, Kansas City, Mo., secretary, and John Hanert, Milwaukee, Mr. Wasmund, Detroit, and J. J. Rossbach, Omaha, directors at large.

Agricultural Limestone Wholesale at Plant, per Ton

Bedford, Ind.—(90% thru 100 mesh) Analysis $CaCo_3$, 98½%; $MgCo_3$, ½%	1.75
Danbury, Ohio—(100% thru 10 mesh and 60% thru 50 mesh) Analysis, 83.54% CaCo3; 14.92% MgCo3—in paper, $4.50; in bulk	$3.00
Gary, Ind.—Fine F.F. screenings, below ⅛ inch	.85
Greencastle, Ind.—(50% thru 50 mesh) Analysis $CaCo_3$, 98%	1.75
Hillsville, Pa.—In 80-lb. ppr. sacks, $4.50; bulk	3.00
Irvington, Ky.—(90% thru 100 mesh)	1.75
Ladds, Ga.—(100% thru 10 mesh linear)	1.50@2.00
Lewisburg, Ohio—(90% thru 100 mesh) Analysis, 96.02% CaCo3; 1.06% MgCo3; bags, $3.50; bulk	2.00
Lime Kiln, Md. (50% thru 50 mesh) Analysis, 96.80% CaCo3; trace MgCo3; bags, $6.50; bulk	4.50
Milltown, Ind. (30 to 50% thru 50 mesh) Analysis. 98% CaCo3	1.50
Montrose, Ia.—(90% thru 100 mesh)	.90@1.00
Muskegon, Mich.—(50% thru 50 mesh) Analysis, CaCo3, 53.35%; MgCo3, .4327%	1.60@2.00
Rochester, N. Y.—(100% thru 12 mesh; 80% thru 100 mesh) Analysis, 106.5% carbonates	3.75@5.00
Stephensburg, Ky.—Analysis, $CaCo_3$, 98%	1.50
Stone City, Ia.—(50% thru 100 mesh)	.50
Stolle, Ill. (near East St. Louis on I. C. R. R.)—(Thru ⅛" mesh) Analysis, CaCo3, 89.61 to 89.91%; MgCo3, 3.82%	1.50
Walford, Pa.—(70% thru 100 mesh; 84% thru 50 mesh; 100% thru 10 mesh); paper, $4.50; bulk	3.00
Whitehill, Ill.—(50% thru 50 mesh) Analysis, CaCo3, 98.98%; MgCo3, .54%	1.50
Winnfield, La.—(90% thru 100 mesh)	3.00

Wholesale Prices of Crushed Stone

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Crushed Limestone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
EASTERN:						
Auburn, N. Y.	.60	1.00	1.00	1.00	1.00	1.00
Burlington, Vt.	.....	.....	1.75	1.75	1.75	.....
Hagerstown, Md.	1.35	1.35	1.35	1.35	1.35	.....
Lime Kiln, Md. (hard stone)	1.50	2.10	2.00	1.75	1.50	1.35
North LeRoy and Akron, N. Y.		1.00 all sizes including R. R. ballast				
Walford, Pa.	1.00	1.50	1.50	1.50	1.50	1.50
CENTRAL:						
Alden, Ia.	.20	.....	1.00	.90	.....	.....
Belvidere, Ill.		1.00 per ton, all sizes or quantity				
Brillion, Eden and Hamilton, Wis.	.80	.80	1.00	1.00	1.05	1.00
Chicago, Ill.		Carlots, all sizes, 1.40*. Wagon, 2.25*.				
Davenport, Iowa	1.00@1.15	1.25*	1.25*	1.15*@1.25*		
East St. Louis (vicinity)	1.50†	.90@1.10	1.00@1.10	1.00@1.10	1.00@1.10	1.00@1.10
Elmhurst, Ill.		1.00 cu. yd. all sizes.				
Gary, Ind.	.75	.75	.75	.75	.75	1.10§
Greencastle, Ind.	.90	1.15	1.00	.95	.90	.90
Illinois, Southern	1.50	1.25	1.25	1.25	1.25	.....
Joliet, Ill.	.80	.....	.70	.70	.70	.70
Lannon, Wis.			1.00 all sizes.			
Lewisburg, Ohio	.60@ .75	.....	.90@1.10	.80@1.00	.80@1.00	.80@1.00
Montrose, Ia.	.....	1.00@1.10	1.00@1.20	.95@1.05	.....	.....
Mt. Pleasant, Iowa	1.50		1.10	1.10	1.00	
Oshkosh, Wis.			1.00 all sizes, Blue Limestone.			
River Rouge, Mich.	.60@1.00	.95@1.00	.95@1.00	.95@1.00	.95@1.00	.95@1.00
Stone City, Ia.	.50	.....	1.20	1.10	1.00	.....
SOUTHERN:						
Brooksville, Fla.	1.00	.....	.....	2.00	.....	.....
Fort Springs, W. Va.		.....	1.35	1.35	1.35	.90‖*
Irvington, Ky.	.60	.....	.....	.75	.75	.75§
WESTERN:						
Atchison, Kan.	.25	1.30	1.30	1.30	1.20	1.20
Carthage, Mo.	1.00@1.15	1.00@1.25	1.15@1.60	.95@1.00	.....	.....
Kansas City, Mo.	.30	1.05	1.05	1.05	1.05	1.05
Blue Sprgs. & Wymore, Neb.	.15	1.25	1.25	1.15	1.10	1.00

Crushed Trap Rock

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Baltimore, Md. (vicinity)	.....	.....	2.50	2.00	1.75	.....
Baltimore, Md.—Trap	.....	1.90	1.90	1.75	1.75	1.65
Bernardsville, N. J.	.....	2.40*	2.40*	2.00*@2.20*	2.00*	.....
Birdsboro, Pa.	1.25	1.75	1.50	1.25	1.25	1.25
Boston, Mass.	3.00	3.00	2.75	2.75	2.50	.....
	Boston prices for truck delivery on job					
Bradford, Conn.	.80	1.30	1.25	1.20	1.10	.....
Branford, Conn.—Trap	.80	1.30	1.25	1.20	1.10	.....
Duluth, Minn.—Trap	.65@ .75	1.35	1.35	1.15@1.25	1.15@1.25	1.15@1.25
Farmington, Conn.	.....	.85	.....	.85	.85	.....
Glen Mills and Rock Hill, Pa.	1.05	1.35	1.55	1.55	1.60	1.30‖
Dresser Junction, Wis.	.50	1.25	1.25	1.00	.90	.....
Little Rock, Ark.	1.75	.....	1.75	1.50	1.35	1.10
Montrose, Ia.—Trap	.....	1.05@1.20	.....	.....	.....	.....
New Britain, Conn.—Trap	.75	1.30	1.20	1.10	1.00	.....
New Haven, Conn. (vicinity)	.80	1.30	1.25	1.20	1.10	.....
Oakland, Calif.—Trap			1.50 for all sizes			
Stephensburg, Ky.	.....	.....	1.00	.....	1.00	.....

Miscellaneous Crushed Stone

City or shipping point	Screenings, ¼ inch down	½ inch and less	¾ inch and less	1½ inch and less	2½ inch and less	3 inch and larger
Atlanta, Ga.—Dolomite	2.35	2.15	2.05	1.95	1.85	1.85
Baltimore, Md.	.....	1.90	1.90	1.75	1.75	1.65
Brooksville, Fla.—Flint	1.00	.....	.....	2.15	.....	.....
Fair Oaks, Sacramento Co., Cal.—Boulders	.85	1.05	.95	.85	.85	.....
			Per ton of 2,000 lbs.			
Ladds, Ga.—Dolomite	2.00	1.80	1.70	1.60	1.50	1.50
Little Falls, N. Y.—Syenite	.60	Other sizes 1.00, including R. R. ballast				
Hendlers, Pa.—Quartzite	.75	1.00	1.35	1.25	1.00	1.00‖
Mt. Pleasant, Ia.—Basalt	.....	.....	.....	.....	.95	.85‡
Atlanta, Ga.—Granite	.35	1.75	1.60	1.50	1.50	1.45
Baltimore, Md.—Granite	1.00	2.00	1.90	1.75	1.75	1.50
Richmond, Va.—Granite	.80@1.00	1.25@2.00	1.25@1.50	1.25¾1.50	1.25@1.50	1.25@1.50
Stephensburg, Ky.—Basalt			$1.00 for all sizes.			
Stockbridge, Ga.—Granite	.50	1.80	1.75	1.60	1.60	1.60
Winnfield, La.—Granite	.....	1.40	2.00	1.75	1.60	1.60
Millican, Brazos County, Tex.—Quartz sandstone	1.50	1.50	1.50	1.45	1.40	1.40

*Cubic yard. †Agri. lime. ‖R. R. ballast. §Flux.

Sand and Gravel Conditions at Buffalo

BUFFALO, N. Y.—Sand and gravel operators here are having their difficulties, not a few of which would be eliminated by a strong local association.

A three-weeks' strike of dredge employees has just ended in the granting of a wage increase of $22.50 per month. The men struck for an increase of $30. Last year their wages were increased $22.50 per month, so that now the ordinary scow laborer is earning from $110 to $120 per month.

The price of sand and gravel has declined from late winter and early spring prices of $1.20 to $1.30 a yd. to 80c to 90c per yd., while the demand is hardly equal to fifty per cent of a normal year.

Seven large companies are operating dredges in Niagara River or Lake Erie and competition and price-cutting are the rule. This sand and gravel has a practical monopoly in the Buffalo building materials market as crushed stone can not compete at the prices ordinarily asked for sand and gravel.

Buffalo producers are particularly hard hit by the increase in railway switching charges and coming on top of the recent strike and other troubles the outlook for the season's business is none too optimistic.

Molding Sand Demand Is Hard to Supply

MILLVILLE, N. J.—The demand for molding sand, which is being mined in large quantities about Millville, is becoming greater daily, and the officials of the munitions plants, foundries and shipyards along the Delaware River and interior Pennsylvania points say that it is imperative that shipments be made faster if the war work is to be speeded up.

The operators of the pits are having great difficulty in obtaining sufficient help to load the boats, trains and motor trucks.

Laborers are receiving from $3 to $4 a day for using pick and shovel. On a recent Sunday Warren Golder, one of the largest operators, paid his men $8 for a nine-hour day to assist him in loading cars for an urgent Government contract.

When you buy War Savings Stamps you do not give—you receive.

Miscellaneous Sands per Ton at Plant

Bowmanstown, Pa.—Fine white silica	$2.10
Dundee, Ohio—Glass sand	2.25@3.00
Morgantown, W. Va.—Glass sand	3.25
Warwick and Sugar Grove, Ohio—Glass sand	2.25@3.00
Zanesville and Layland, Ohio—Moulding, fine, $1.75; coarse	1.25
Sands, Elk Co., Pa.—Glass sand, $2.50@2.75; selected glass sand	3.00
Albany, N. Y.—Moulding, 2,000 lbs.	1.75@2.00
Allentown, Pa.—Moulding	1.25@1.40
West Albany, N. Y.—Moulding sand	1.25@5.00

Wholesale Prices of Sand and Gravel

Prices given are per ton, F. O. B., at producing plant or nearest shipping point

Washed Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Boston, Mass.	1.25	1.00	2.00	1.90	1.00@1.75	1.50
Bowmanstown, Pa.	Concrete sand, 1.20; plastering, 1.25; stuccowork, 1.50					
Buffalo, N. Y.	1.00 cu. yd., all sizes					
Buffalo, N.Y. (Niagara River)	.80	.75	.70	.70	.70	.70
Washington, D. C. (t., 2,000 lbs.)	.75	.75	1.45	1.15	.95	.95
CENTRAL:						
Algonquin, Ill.	.....	.50	.....	.50	.50	.....
Barry, Pike Co., Ill.	.60 to .80, all sizes					
Barton, Wis.	.75	.70	1.0	.70	70	.70
Beloit, Wis. (vicinity)	.50	.50	.60	.50	.50	.50
Chicago	.93@1.03	.83@ .93	1.00@1.20	.93	.83@ .93	.83@ .93
Clinton, Ind.	.75	.75	.85	.75	.75	.75
Cincinnati, Ohio	.40@ .50	.40@ .50	.40@ .60	.50@ .60	.50@ .60	.50@ .60
Des Moines, Ia.	.75@1.00	.40@ .50	1.25@1.50	1.00@1.50	1.00@1.25	1.00@1.25
	Concrete mix, 25% gravel, .60.					
Elgin, Ill.	.50	.50	.50	.50	.50	.50
Escanaba, Mich.	.....	1.15*	1.20	1.20	.90	.90
Fort Dodge, Ia.	.80	.70@ .80	1.36	1.36	.....	1.36
Greenville and Mechanicsburg, Ohio	.40@ .50	.40@ .50	.40@ .60	.50@ .60	.50@ .60	.50@ .60
Illinois, Northern	.60@ .70	.60@ .70	.60@ .75	.60@ .75	.60@ .70	.50@ .60
Indianapolis, Ind.	.....	.50	.....	.65	.65	.65
	Concrete mix, .55.					
Janesville, Wis.	.50	.50	.....	.....	.50	.....
Jackson, Mich.	.40@ .50	.40@ .50	.40@ .60	.50@ .60	.50@ .60	.50@ .60
Mason City, Ia.	.50@ .60	.40@ .50	1.00@1.20	1.00@1.20	.90@1.20	.90@1.20
	Railroad ballast and road gravel .40@.50					
Milwaukee, Wis.	.90	.90	.90	.90	.90	.90
Minneapolis, Minn.	.50*	.50*	1.25*	1.20*	1.15*	1.10*
	Cu. yd.—2,800 lbs.			Cu. yd.—2,600 lbs.		
Moline, Ill.	.....	.50	1.00	.90	.90	.80
Rockford, Ill.	.55@ .60	.55@ .60	.....	.....	.60@ .70	.....
Sabula, Ia.	.60	.60	1.00	1.00	.90	.90
Saginaw, Mich. (vicinity)	.78	.78	1.68	1.43	1.43	1.33
South Bend, Ind.	.50@ .65	.50@ .65	.90@ .95	.70@ .85	.70@ .85	.70@ .85
Summit Grove, Ind.	.50@ .60	.....	.....	.....	.....	.....
St. Paul, Minn.	.55@ .80	.55@ .80	1.15@1.30	1.15@1.30	1.15@1.30	1.15@1.30
Terre Haute, Ind.	.75	.75	.85	.75	.75	.75
Montezuma, Covington, Ind.	.75	.75	.85	.75	.75	.75
Wabash Valley District, Ind.	All sizes, .75.					
Winona, Minn.	.60@ .90	.60@ .90	1.00@1.40	1.00@1.40	.95@1.25	.95@1.25
SOUTHERN:						
Alexandria, La.	.....	.65*@1.00*	.....	.....	.....	1.50*
Charleston, W. Va.	.....	1.10	1.20	1.20	1.20	1.20
Knoxville, Tenn.	.85	.85	1.10	1.10	1.10	1.00
Lake Weir, Fla.	.50	.....	.....	.....	.....	.....
New Orleans, La.	1.30	1.30	1.95	.....	1.95	1.95
Pelzer, S. C.	All sizes, .55, washed but not graded.					
Summit Grove, Ind.	.65@ .75	.65@ .75	.65@ .75	.75@ .85	.75@ .80	1.50@1.75
Waco, Tex.	.40@ .60	.55@ .65	.60@ .85	.60@ .85	.60@ .85	.60@ .85
WESTERN:						
Atchison, Kan.	.....	.....	1.40	.....	.....	.90
Denver, Col.	.....	.40*	.....	.....	.....	.....
Kansas City, Mo.	Carload lots, .40 at plant					
Lincoln, Neb. (carloads)	.52	.52	1.80	1.80	.....	1.80
Lincoln, Neb. (wagon lots)	1.00@1.20	1.00@1.20	2.60	2.60	.....	2.60
Niles, Cal.	.60@1.00	.50@ .80	.60@ .85	.50@ .80	.50@ .80	.50@ .80
	Quotations as at destination, including freight					
Pueblo, Colo.	.....	.60@ .80	.60	.....	1.00@1.50	.....
Roche Spur, Tulare Co., Cal.	.30@.35 River sand					
Roseburg, Ore.	.60	.60	.50	.50	.50	.50
Seattle, Wash.	1.00	1.00	1.75	1.00	1.00	1.00
Vancouver, B. C.	.....	.75@1.00	.....	.75@1.00	.....	.75@1.00

Bank Run Sand and Gravel

City or shipping point	Fine sand, 1/10 inch down	Sand, ¼ inch and less	Gravel, ½ inch and less	Gravel, 1 inch and less	Gravel, 1½ inch and less	Gravel, 2 inch and less
EASTERN:						
Attica, N. Y.	.50	.50	.50	.60	.60	.60
Boston, Mass.	1.15	.60	.....	.....	.....	.....
Burnside, Conn.	.85*	.85*	.....	.....	.....	.....
Lowell Junction, Mass.	.....	.50*@ .75*	.....	.....	.....	1.25*
Portland, Me.	$1.50* cu. yd.					
So. Wilmington, Mass.	.....	.50*@ .75*	.....	.....	.....	1.25*
Yardville, N. J.	.....	.40@ .60	.....	.....	.....	.....
York, Pa.	.....	.80@1.10	.....	.....	.....	.....
CENTRAL:						
Attica, Ind.	.75	.75	.75	.75	.75	.75
Barton, Wis.	40	.....	.....	.....	.....	.....
Beloit, Wis. (vicinity)	.30 as found in bank.					
Escanaba, Mich.	.90*	.....	.....	.....	.....	.....
Sabula, Ia.	.....	.55	.....			
South Bend, Ind.	.30 to .40 according to volume.					
Saginaw, Mich. (vinicity)	.83	.83	1.00	1.00	1.00	1.00
Janesville, Wis.	.....	.....	.....	.....	.50	.....
Moline, Ill.	.70	.....	.....	.....	.....	.....
Portsmouth, Ohio	.....	.65	.....	.85	.....	.....
Terre Haute, Montezuma & Covington, Ind.	.....	.....	.....	.....	.60	.60
Wabash Valley District	.75	.....	.....	.....	.....	.....
Winona, Minn.	Pit run gravel under 2-in., .60@.90.					
SOUTHERN:						
Alexandria, La.	.47 to .65 per ton					
Howcott, La.	Running 50% plus on rock content on ⅛" screen, .55@.65					
Knoxville, Tenn.	.85	.....	.....	.....	.....	.....
WESTERN:						
Atchison, Kan.	.....	.....	.....	.....	.....	.50
Denver, Colo.	.....	.....	.30*	.....	.....	.....
Pueblo, Colo.	.60 unscreened					

*Cubic yard. ¶ .25 millrun; screened .50. B, bank. L, lake.

Passed By The Screens

Personals

Walter L. Haehnlen, of Charles Fearon & Co., Philadelphia, has been elected a director of the Giant Portland Cement Co., to succeed John A. Kelly, resigned.

W. M. Brown has been made manager of the Agricultural Limestone Department of the France Stone Co., Toledo, Ohio, succeeding R. F. Lynn, who has left the company.

Karl H. Minneman, purchasing agent of the Marble Cliff Quarries Co., Columbus, Ohio, has been made manager of the Agricultural Limestone Department of the company also, succeeding Frank H. Colgan, who has resigned, as noted elsewhere.

A. P. McCallie, assistant general sales manager of The Kelly Island Lime & Transport Co., has entered military service, making necessary the following changes in the organization: A. J. Earl succeeds Mr. McCallie as assistant general sales manager; J. F. Potts succeeds Mr. Earl as traffic manager.

Charles Dynes, sales manager of the Wisconsin Lime & Cement Co., is back in Chicago after a six weeks' visit to Washington, D. C. He says that the nation's capital is the busiest place, and a trip there will cause even the most skeptical to realize that the nation's present business is "Fighting the Hun."

Frank H. Colgan, manager of the Agricultural Limestone Department of the Marble Cliff Quarries Co., Columbus, Ohio, has resigned to enter the agricultural limestone business on his own account. He has purchased the agricultural limestone output of several quarries and will maintain an office and staff for its sale.

W. I. Stroh, president Stroh Steel Hardening Co., Pittsburgh, is making an extended trip through the West calling on cement plant manufacturers and operators of large quarries. The important cities in his itinerary are Chicago, Denver and San Francisco. During his absence C. W. Hay, secretary of the company, will be in complete charge, and Mr. Hay is pleased to report that business is exceedingly good.

OBITUARY

Charles Wesley Rhodes, aged 60, died June 3 in his home in New Castle, Pa., following a paralytic stroke. Mr. Rhodes was a native of that city and had been engaged in the limestone business most of his life. He was a member of the United Presbyterian church.

Quarries

D. L. Taylor & Co., Wilmington, Del., have bought the quarry and plant of Stewart & Donohue.

The Helena Rock Co., Little Rock, Ark., has announced the surrender of its charter, says the Little Rock Gazette.

Sellersville borough, Pennsylvania, has bought J. A. Kooker's stone quarry and will buy a crusher to make material for repairing streets.

Operations on a deposit of ganister rock at Kunkletown, Pa., will shortly begin by the Kunkletown Brick & Kaolin Co., who recently bought the Chestnut Ridge White Brick Co.

Notice of dissolution has been filed by the Green Stone & Quarry Co., Sawyer, Door County, Wis. Capital was $35,000. President, Adolph Green, 704 S. Jackson street, Green Bay; secretary, O. A. Green, Sawyer, Wis.

The Wise Granite Co. of Richmond, Va., has obtained the contract from the cantonment division of the War Department for the immediate erection of barracks and buildings for the stevedore regiments at Fort Lock, in Norfolk, and in Richmond.

The Harper's Ferry Stone and Lime Co., who have been operating a plant at Millville, near Charleston, W. Va., for 12 years, have sold out to the Millville Stone and Lime Co., a recently organized concern, for $100,000. The officers of both companies are from Pittsburgh.

Newspaper reports state that considerable damage was done to the stone crushing department at the Thomasville (Pa.) Stone and Lime Co.'s plant a few weks ago, when a giant blast was set off. Several workmen were slightly injured. The plant was so damaged that it will be out of service until repairs can be made. The main engine suffered the principal damage. Huge rocks were hurled through the air, one penetrating the stone crushing plant.

Sand and Gravel

The Perry-Baetzel Sand Co., Rochester, N. Y., have bought the property and business of the Rochester Sand Co. C. E. Woodward, also of Rochester, has quit the sand and rock business.

The Broadway Sand, Gravel & Art Stone Co., Cleveland, Ohio, has purchased from R. Eisenmann an eight-acre parcel on Bedford road, South Newburg. The property lies between Stops 5 and 6 A. B. C. line and was sold, according to the stamps on the deed, for a consideration of $20,000.

The plant of the Hancock Building Sand Co. at Hagerstown, Md., wil be dismantled and removed to Round Top as soon as practicable, the Round Top Sand Co. having purchased the entire plant. There is a better grade of sand at Round Top that can be handled much cheaper.

W. U. Jury has been elected president of the recently organized Carbon Sand & Construction Co. of Shamokin, Pa. He is a structural engineer who announces that he has discovered that a sand can be made from stoker fed boiler ashes, which sand, he claims, is superior to any other sand in general construction work and can be produced for less money. Fred Kumer is vice-president and general manager.

Lime

As soon as the proper machinery can be obtained the Hoppas 84-acre farm north of Portland, Mich., and opposite the power dam of Portland's municipal dam, will be turned into a calcium mine. The land was purchased by Detroit men.

Jesse Howland, Sea Bright, N. J., has leased the old O'Reilly quarry at German Valley, N. J., for a term of ten years. Extensive improvements are planned. Construction has commenced on a new railway connection to the lines of the Central Railroad of New Jersey.

The state of Oregon is constructing a lime plant near Gold Hill with a crew of honor men from the penitentiary. The last legislature appropriated $20,000 for the purpose. C. W. Courtney is directing the work and Benton Bowers, member of the State Lime Board, is one who has the matter in charge. It will be in operation in a few months.

The Tilghman Lime & Supply Co. of Fruitland, Md., is being organized with a capital of $100,000. Agricultural lime will be produced. The most up-to-date machinery will be installed. The officers are: President, Colonel William B. Tilghman, Jr., vice-president, William S. Moore, of Fruitland; secretary and treasurer, Marvin C. Evans.

Cement

New Zealand is going extensively into the building of concrete roads, because the cost of upkeep is so low.

The Frank E. Buell Lumber Co. of Edmond, Okla., is in the market for a cement block machine that makes a nest of blocks, a monolithic process.

The Orr Coal Mining Co. of West Virginia has been fined $5,000, according to the High Bridge (N. J.) Gazette, by a Federal judge in Philadelphia for overcharging the Edison Cement Co. and other corporations $1,751 above the price fixed by President Wilson.

Fire, believed to have been caused by an electric wire, broke out in the bag house of the Knickerbocker cement plant in Greenport, N. Y., ruining more than 50,000 cement bags and causing a loss of nearly $25,000. Walls of the building are of concrete and the fire could not reach any other part of the plant.

Incorporations

Northern Phosphate Mining Co., Buffalo, N. Y.; $500,000.

Peerless Sand Co., Conneaut, Ohio. C. M. Bixler and others; $25,000.

W. T. Taylor Gravel Co., Flomaton, Ala.; capital, $12,000. Incorporated by J. E. Taylor, W. R. Taylor, John Massey and others.

Von Ormy Gravel Co., San Antonio, Texas; capital stock, $10,000. Incorporators: W. H. Jennings, L. H. Browne and N. H. Browne.

The Washington Sand and Gravel Co., to manufacture and produce building materials and supplies of all kinds; $500,000. C. L. Gray, Lester Sisler, G. W. Sisler, Washington, D. C.

New Jersey Limestone Quarries, quarry limestone, Belvidere, N. J.; $100,000. Incorporators: Aaron D. Keller, William F. Glose, Daniel C. Reilly, Bethlehem, Pa.; Charles A. Dahlke, Belvidere, N. J.

Vesper Clay Products Co., Pierre, S. D. C. R. Goldsmith, Vesper, Wis., representative for Wisconsin. Capital, $500,000. Wisconsin share of capital, $100,000. Business of producing concrete, brick, tile, limestone, cement, sand, etc.

Daley Molybdenite Co., Superior, Wis.; capital, $75,000. Frank Daley, Isaac N. Hall and Benj. Marsh, incorporators. Attorney, John A. Cadigan, Room 23, Wisconsin building, Superior, Wis. Business of quarrying, mining and smelting.

Furman-Turk Company, Manhattan, N. Y.; to mine or otherwise extract coal, ores, stone and other minerals. Capital, $1,500. Directors: Walter F. Furman, 45 East 42nd street; Harold R. Turk, 648 West 160th street; Edward Carey Cohen, 27 Cedar street, New York.

Lincoln Products Co.; $500,000. Williamson, Burleigh & McLean, Augusta, Maine. Carrying on metallurgical, mining, smelting, quarrying business. President and treasurer, E. M. Leavitt; clerk, Ernest L. McLean. Directors: Clyde R. Chapman and E. M. Leavitt, Augusta, Maine.

Northern Fisheries Co.; $1,500,000. Williamson, Burleigh & McLean, Augusta, Maine. Carrying on metallurgical, mining, smelting and quarrying business. President and treasurer, E. M. Leavitt; clerk, S. L. Fogg. Directors: Clyde R. Chapman and E. M. Leavitt, Augusta, Maine.

Rosoff Engineering Co., Manhattan, N. Y.; business of mining, manufacturing and otherwise dealing in asphalt and cement, all kinds of minerals, stone and other products of the earth. Capital, $5,000. Directors, Rose Rosoff and Samuel R. Rosoff, 2235 85th street; Jacob M. Grossman, 88 Bay 32nd street, Brooklyn, N. Y.

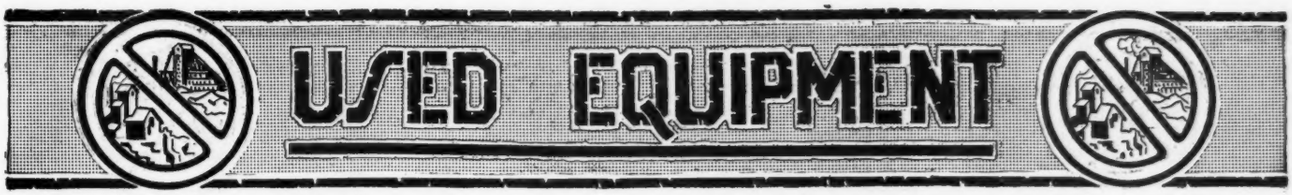
Southern Farms Co., Jacksonville, Fla.; $2,000,000. Officers: C. E. McLeod, president-director, Jacksonville, Fla.; Lyman B. Kendall, vice-president-director, 520 Park avenue, New York City; F. W. Rivers, secretary-treasurer; J. J. Logan, director, Jacksonville, Fla. Objects: Timber business; real estate; general farming, and "to produce, mine, manufacture and deal in phosphate, fertilizers and all the products and by-products thereof."

Potash

The Alliance Potash Co. of Alliance, Neb., has begun producing. The potash water is taken by pipe line from Sturgeon Lake, 16 miles away.

J. C. Marsh, of the Chamber of Commerce, Marshfield, Wis., has announced that a potash factory will be built in that city and that a site is being sought. The product, it appears, will be made from wood ashes.

The officers of the J. B. Speed Co., sales agents for the Louisville Cement Co., are incorporators of the National Process Co., capitalized at $100,000 for the purpose of acquiring land and preparing to market ore, metal, clay, coal and mineral substances. The officers and incorporators are: W. S. Speed, president; F. M. Sackett, vice-president; Henry S. Gray, secretary-treasurer; H. E. Brookby and E. J. Heimerdinger. It is reported that the company will produce potash.



ADVERTISEMENTS in this department are for the Sale and Want of Second-Hand Machinery and Equipment.

RATES: $2.50 per column inch per insertion.

Locomotives

4 ft. 8 1-2 in. Gauge

1—49½ ton Vulcan 6-Wheel Switcher. Practically good as new.

1—34 ton Rhode Island 4-Wheel Forney. Overhauled.

1—30 ton Davenport 4-Wheel Saddle Tank. First Class.

1—26 ton Davenport 4-Wheel Saddle Tank. First Class.

36 in. Gauge

10—14 ton 9x14 cyl. Porter 4-Wheel S. T. First Class.

1—14 ton 9x14 cyl. Davenport 4-Wheel S. T. First Class.

1—9 ton 7x12 cyl. Davenport 4-Wheel S. T. First Class.

1—7½ ton 6x10 cyl. Davenport 4-Wheel S. T. First Class.

24 in. Gauge

2—8½ ton 7x12 cyl. Davenport 4-wheel S. T. First Class.

Cars

10—1½ yd. 36 in. gauge Atlas All Steel V-Shaped. First Class.

6—2 yd. 36 in. gauge Western Two-Way Side Dump. Overhauled.

40—1 yd. 24 in. gauge Koppel One-Way Side Dump, All Steel. First Class.

30—1 ton 36 in. gauge End Dump Quarry. Good.

Hoists

1—7x10 Lambert D. C., D. D. with Boiler. First Class.

2—8¼x10 in. Lidgerwood D. C., D. D. with Boiler. First Class.

Boilers

1—8 ft. x 13 ft. 150 H. P. Scotch Marine Boiler with self contained and attached steel Combustion Chamber. 125 lb. pressure. First Class.

Crushers

1—No. 5 Austin Gyratory Crusher complete with new babbitting mandrels. First class.

Compressors

1—280 ft. 2-stage Air, Norwalk Steam Driven Air Compressor, steam cylinder 10 in. air 7x10x12. Excellent condition.

1—909 ft. Norwalk, 2 stage, Compound Air Compressor, steam 12 and 22x20, air 12½ and 20x20. First class.

Generator

1—150 KVA, 3 phase, 60 cycle, 440 volt Fort Wayne General Electric Generator, complete with switchboard. First class.

Motor

1—225 H. P. (Fort Wayne General Electric) 3 phase, 60 cycle, 440 volt Synchronous Motor. First class.

Wire Rope

10 Pieces 1⅝ in. A. S. & W. Plow Steel Rope, 6x19, with hemp center. Lengths 650 to 680 ft. Shows no wear. Excellent.

Approximately 2000 ft. 2½ in. 6x19 Wire Rope on wooden reels. First class.

ZELNICKER IN ST. LOUIS

GET BULLETIN 237
76 BARGAIN PAGES

SPECIAL BARGAINS

To close an account we will make very close prices on the following:

Two 150 H. P. Scotch Marine Boilers, 130 pounds working pressure, with stack.

One 100 H. P. Monighan two drum hoist for electric operation.

One 1½ yard Hayward Orange-Peel Bucket with extra set of chains.

One Dull Dragline outfit 700 foot span 1½ yard bucket, manganese fitted.

One No. 5 Austin Crusher with extra head, shaft gears, and 60 foot elevator.

One set of 3 conical screens (72") with shaft bearings, gears, and sand separator.

One 200 H. P. Corliss Engine—Fine condition.

One 100 foot steel mast.

Two 24" x 18" Farrell Jaw Crushers.

OTHER EQUIPMENT

Two Lidgerwood hoisting engines, 8¼" x 10" cylinders, two drums and boilers.

One 9" x 10" D.C. D.D. Lidgerwood hoist with extra large boiler.

One 7" x 10" D.C. D.D. Lidgerwood hoist without boiler.

One practically new No. 1 Thew Shovel with one yard dipper.

One Baldwin S. G. 6 wheel switcher, 17" x 24" cylinders, weight 50 tons.

Price, specifications, or any other details on request.

National Surface Guard Co. HARRISON 6916 343 S. Dearborn St., Chicago, Ill.

For Immediate Delivery

1—3-ton Plymouth Gasoline Locomotive, 24" Gauge;
1—No. 16 New Holland Jaw Crusher, extra Rolls for Pulverizing, 18' Elevator, 15-ton Bin and Screen, all on Trucks;
1—50 H. P. Foos Gas Engine;
1—100-H. P. Thomas Electric D. C. Hoist;
1—3⅜" Woods Rock Drill;
1—80 and 1—100 H. P. Locomotive Type Boiler;
24"-36" Gauge Sectional Track;
20 Lbs. Rail Frogs and Switches.

Hoisting Engines, Concrete Mixers, Boilers, Derricks, Sectional Track, Rail, Pipe and Cable

T. J. Lane Equipment Company
Bushwall Building SPRINGFIELD, OHIO

IMMEDIATE SHIPMENT

1—Motor-driven Rock Crushing plant (complete).
2—1500 cu. ft. steam driven air compressors.
20—Crushers, sizes No. 2 to No. 12.
1—Piece ½" Roebling steel cable, 580'. Traction Brand, 10c foot.
4—Pieces ⅝" Roebling steel cable, 285' each. Traction Brand, 11c foot.

POWER PLANT EQUIPMENT.
SEND US YOUR INQUIRIES.

Ross Power Equipment Co.
INDIANAPOLIS, INDIANA

ROCK PRODUCTS
Fills the Bill. Read It!
Advertise in It! It Pays!

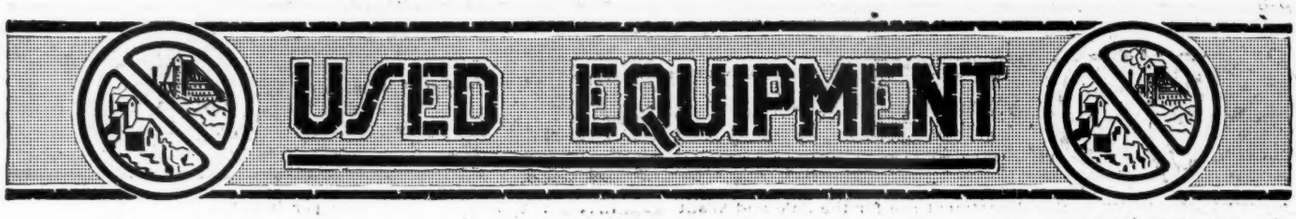
RAILS - RAILS - RAILS
NEW RAILS
16-20-25-40-70-80
RELAYERS
30-35-56-60-65-85
MORRISON & RISMAN
RAIL DEPARTMENT: BUFFALO, N. Y.

WANTED

One No. 4 McCully Gyratory Crusher, suspended drop bottom type. Address with complete description of machine, price wanted.

J. E. BAKER COMPANY
YORK, PA.

Cooperation is the thing—please mention ROCK PRODUCTS.



WANTED

1—Gear driven Electric Hoist, suitable for 2 tons' capacity.
1—Belt driven Air Compressor, approximate displacement of 150 cu. ft. per minute, suitable for 100 lbs. working air pressure.
1—Gear driven power pump with approximate capacity of 100 gallons per minute against 150 lbs. pressure.
1—25 H. P. A. C. Slip Ring Motor, 60 cycle, 3 phase, 550 volts, 1200 R. P. M.
1—25 H. P. A. C. General Electric, type ITC or Westinghouse, type CI Motor, 60 cycle, 3 phase, 550 volts, 900 R. P. M.
1—10 H. P. Squirrel Cage Motor, 60 cycle, 550 volts, A. C., 900 R. P. M.
1—Mine Skip Car, approximately 30 cu. ft. capacity.
2—24 inch gauge End Dump Mine Cars, capacity 12 to 14 cu. ft.
3 tons 12 lb. Relaying Rails.
600 ft. 1¼ inch used pipe in good condition.

When quoting price, advise condition of machinery, giving full information, including name of manufacturer and send cut of machine if possible.

American Mineral Co.
Johnson, Vermont

STONE CRUSHERS

No. 7½ AUSTIN
No. 5 GATES "B"
(Fine Shape)
No. 5 AUSTIN
No. 4 GATES "K"
No. 3 McCULLY

25 Others, Gyratory, Jaw and Disc Type. Inquiries also solicited for dependable "used" Steam Shovels, Locomotives, Cars, Rails, Cranes, Derricks, Hoists, Grab Buckets, Etc.

Wm. B. Grimshaw Co.
1048 Drexel Building
PHILADELPHIA, PA.
"Used" but "Not Abused" Machinery

For Sale by Owner

1—American Hoist Engine, 5½"x8", D. C. D. D., with Sleuthing Attachment & Boiler.
1—No. 5 AUSTIN Gyratory Crusher.
500' 1¼" Plow Steel Cable.
1—INGERSOLL-RAND Air Compressor, Imperial type 10, Double Stage, 12x12 & 7½x12, capacity 327 Cubic Feet, direct connected to General Elec. 50 H. P. Motor with Auto Starter and including Receiver Tank and Automatic Unloader.
1—All Steel Derrick with Bull Wheel and Interchangeable Boom for lengths 30', 60', 90' and 110'.
1—General Elec. 50 H. P. Motor, A. C., 2 phase, 860 R. P. M.

BETTENDORF STONE COMPANY
820 Kirkwood Blvd. Davenport, Iowa

FOR SALE—BARGAIN

Complete outfit for making concrete farm drain tile, Dunn power-press, engine, concrete mixer, forms, etc.

Also set of concrete sewer pipe forms.

Call on or address

MOBILE COAL COMPANY
MOBILE, ALABAMA

FOR SALE—Steel Cable

1 rope 2¼" 6x19 Plow Steel, 1840 ft.
1 rope 2" 6x19 Plow Steel, length 600 ft.
1 rope 1-1/8" 6x19 Plow Steel, length 700 ft.
1 rope ⅞" 6x19 Plow Steel, length 3500 ft.
2 ropes ⅞" 6x19 Plow Steel, length 2500 ft.
2 ropes ⅞" 6x19 Plow Steel, length 1400 ft.
Several ropes ⅞" 6x19 Plow Steel, lengths 800 to 1000 ft.
10,000 ft. ¾ and ⅞" Plow Steel in various lengths
Some good ¾" & ⅞", 6x7 Haulage Ropes, 85 to 95% efficiency.

PROMPT SHIPMENT

B. CARPENTER
118 N. LaSalle St. CHICAGO, ILL.

FOR SALE

Thew

Steam Shovel

No. 0—⅝-yd. bucket, traction wheels. In absolutely first-class condition. Address

R. J. NOONEY
P. O. Box 210, E. Akron, Ohio

Our recent sales have been of
Boilers, Cranes, Derricks
ETC.
Why not write us?

The Curtiss-Willis Co
INCORPORATED
30 CHURCH ST. NEW YORK

Mechanical Equipment
Wire Rope
"We Find Things"

Idle Machinery Absorbs Profits

This department is the medium for the men who keep the wheels going. Sell your idle machinery to the man who'll keep it going.

RAILS

All sections of new and second-hand, on hand for quick shipment. Also purchase old and abandoned plants for dismantling purposes.

M. K. FRANK, Pittsburgh, Pa.

You are reading this ad. So are others. That is why it will pay you to advertise your used machinery in these columns

Saying "I saw it in ROCK PRODUCTS" will bring quick action.

CLASSIFIED ADVERTISING

ADVERTISEMENTS in this department are for Positions Wanted, Positions Vacant, Business Opportunities, Plants for Sale, etc.

RATES: 25c per line, per insertion; minimum charge, 50c. With display of any sort, $2.50 per column inch, per insertion.

Help Wanted

WANTED: A going California cement factory wants experienced men in all departments. Reply, stating experience, age and salary desired to Box 1260, care ROCK PRODUCTS.

WANTED: For Cement Mill in Australia, Chemical Engineer experienced in every detail of cement manufacture. Liberal salary and contract offered to man of high qualifications. State in detail training, experience, salary desired, etc. Address Box 1262, care ROCK PRODUCTS.

WANTED: Competent man to take charge of stone quarry producing crushed stone for railroad ballast, highway purposes and concrete work. State age and experience, also salary required, as well as where last employed. Address Box 1254, care ROCK PRODUCTS.

Positions Wanted

POSITION WANTED as manager or Supt. by man of long experience in heavy steam shovel quarrying, where mine or well drill blasting is essential to large output and efficient operation, thorough knowledge of all details in successful operation and management, excellent references. Address Box 1241, care ROCK PRODUCTS.

ELEVATING AND CONVEYING MACHINERY. Engineer, 12 years' experience, design and construction, all types of handling machinery and storage structures, steel, concrete, timber and mechanical design, desires to locate in west, California preferred. Will consider any location. C. C. Brinley, 278 Wardwell Ave., Staten Island, N. Y.

POSITION WANTED: Technical graduate, formerly engineer and assistant manager of one of the country's largest quarries and crushing plants, wishes position as manager of crushing plant where increase in production and efficiency in operation are desired. Address Box 1259, care of ROCK PRODUCTS.

Plants for Sale

FOR SALE OR LEASE: Crushed stone quarry situated near Wilkes-Barre, Pa. Very hard green sandstone, practically equal to trap rock for road material. Quarry equipped to produce five to six hundred tons per day—has frequently run eight hundred. Ample rail facilities and an extensive market. For detailed information communicate with Arthur L. Stull, 182 S. Franklin St., Wilkes-Barre, Pa.

FOR SALE: Limestone Crushing and Pulverizing plant, on Southern Railway, North Alabama. First class, very cheap, stone inexhaustible, best quality. Gone to Army—must sell. For full details address 2237 Doswell Avenue, St. Paul, Minnesota.

FOR SALE: Limestone Crushing Outfit, with all the tools belonging to it, near the Hocking Valley Railway at Crawford, Wyandot Co., Ohio. Including seven acres of the very best blue limestone deposit, cropping out near the surface. A good paying business, as the crushed rock is well adapted for roadbuilding or concrete. Samples of the rock sent on application by parcel post. Emil Schlup, Upper Sandusky, Ohio.

FOR SALE: Rock crushing plant, 25 mi. from San Antonio; capacity, 10 cars per day; machy. good as new. Will sell very cheap or may lease. 725 S. Salado St., San Antonio, Tex.

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Jaite Company, The
Urschel-Bates Valve Bag Co.

CALCINING MACHINERY
Atlas Car & Mfg. Co.
Butterworth & Lowe

CEMENT, PORTLAND
Alpha Port. Cement Co.
Atlas Port. Cement Co.
Carolina Portland Cement Co.
French, Samuel H., & Co.
Huron Wyandotte Portland Cement Co.
Peerless Portland Cement Co.
Standard Portland Cement Co.

CHAINS AND TRANSMITTING MACHINERY
Stephens-Adamson Mfg. Co.

CONVEYORS AND ELEVATORS
Caldwell, H. W., & Son Co.
Good Roads Mach. Co.
Jeffrey Mfg. Co., The
Webster Mfg. Company
Gifford-Wood Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

CRANES
Locomotive Gantry
Ball Engine Co.
Byers Mach. Co., John F.
McMyler-Interstate Co.
Ohio Locomotive Crane Co.

CRUSHERS AND PULVERIZERS
Acme Road Mach. Co.
Allis-Chalmers Mfg. Co.
American Pulverizer Co.
Austin Mfg. Co.
Bacon, Earle C.
Bradley Pulverizer Co.
Butterworth & Lowe
Chalmers & Williams
Good Roads Mach. Co.
Gruendler Pat. Crusher & Pulverizer Co.
Jeffrey Mfg. Co.
K.-B. Pulverizer Co.
Kent Mill Co.
Lewistown Foundry & Machine Co.
McLanahan-Stone Machine Co.
Pennsylvania Crusher Co.
Raymond Bros. Impact Pulverizer Co.
Stroh Steel Hardening Process Co.
Traylor Eng. & Mfg. Co.
Universal Crusher Co.
Webb City & Carterville F. & M. Works.
Williams Pat. Crusher & Pulverizer Co.
Worthington Pump & Mach. Corp.

DRILLS
Sanderson-Cyclone Drill Co.
Sullivan Mach. Co.

DRYERS
American Clay Mach. Co.
Ruggles-Coles Eng. Co.

ENGINEERS
Bacon, Earle C., Inc.
Fuller Engineering Co.
Smidth & Co., F. L.
Schaffer Eng. & Equip. Co.

EXCAVATORS
Ball Engine Co.
Dull, Raymond W., Co.
Good Roads Mach. Co.

FUSES
Ensign-Bickford Co.

GEARS
Caldwell, H. W., & Son Co.

GRAVEL WASHING EQUIPMENT
Good Roads Mach. Co.

GYPSUM-PLASTER
Best Bros. Keene's Cement Co.
Wheeling Wall Plaster Co.

HYDRATING MACHINERY
Kritzer Co., The
Miscampbell, H.
Schaffer Eng. & Equip. Co.

INDUSTRIAL CARS
Watt Mining Car Wheel Co.

LIME, HYDRATED
Scioto Lime & Stone Co.

LABORATORY EQUIPMENT
Bausch & Lomb Optical Co.

LIME KILNS
Steacy-Schmidt Mfg. Co.
Vulcan Iron Works

LOADERS AND UNLOADERS
Jeffrey Mfg. Co.
Gifford-Wood Co.
Stephens-Adamson Mfg. Co.
Weller Mfg. Co.

LOCOMOTIVES
Fate Co., J. D.
Jeffrey Mfg. Co., The

METAL LATH
Penn Metal Co.

MORTAR COLORS
Chattanooga Paint Co.

MOTORS, ELECTRIC
Gifford-Wood Co.

MOTOR TRUCKS
Federal Motor Truck Co.
Kissel Motor Car Co.
Pierce-Arrow Motor Car Co.
Sterling Motor Truck Co.
White Company, The

OIL ENGINES
Power Mfg. Co.

PAINT AND COATINGS
Chattanooga Paint Co.
Williams, C. K., & Co.

PERFORATED METALS
Chicago Perforating Co.
Hendrick Mfg. Co
Nortmann-Duffke Fdy. Co.
Johnston & Chapman Co.

PLASTER MACHINERY
Butterworth & Lowe

POWER TRANSMITTING MACHINERY
Caldwell, H. W., & Son Co.
Weller Mfg. Co.

POWDER
Atlas Powder Co.
Du Pont de Nemours Co., E. I.

PULVERIZED FUEL
Locomotive Pulv. Fuel Co.

SEPARATORS
The W. S. Tyler Co.

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Gifford-Wood Co.
Good Roads Machinery Co.
Johnston & Chapman Co.
Stephens-Adamson Mfg. Co.
Sturtevant Mill Co.
The W. S. Tyler Co.

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Ball Engine Co.
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STEEL PROCESS
Stroh Steel Hardening Process Co.

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